

# THE CULTIVATOR.

NEW

"TO IMPROVE THE SOIL AND THE MIND."

SERIES.

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## THE CULTIVATOR

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## MR HORSFORD'S LETTERS.—NO. XII.

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Giessen, April 16, 1846.

MR. TUCKER—A few days since, I received the numbers of the Cultivator from August forward. In glancing through them my eye met with numerous remarks and inquiries, that, I am persuaded would not have found a place in your valuable journal, had the accompanying letter of Baron von Liebig been previously circulated among your subscribers.

In connection with the letter sent to you last year, it seems to me to present in the happiest manner, the great and yet simple truths of rational manuring. I beg for it an insertion in the Cultivator.

Respectfully yours, E. N. HORSFORD.

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## ON THE PRINCIPLES OF ARTIFICIAL MANURING.

BY BARON VON LIEBIG.

If we compare the experience of farmers regarding the fertility of the soil and the quantity of its productions, we are surprised by a result which surpasses all others in general application and uniformity.

It has been observed, that in every part of the globe where agriculture is carried on, in all varieties of soil, and with the most different plants and modes of cultivation, the produce of a field on which the same or different plants have been cultivated during a certain number of years, decreases more or less in quantity, and that it again obtains its fertility by a supply of excrements of man and animals, which generally are called manure; that the produce of the fields can be increased by the same matters, and that the quantity of the crop is in direct proportion to the quantity of the manure.

In former times scarcely any attempt was made to account for the cause of this curious property of the excrements of man and animals. Without taking into consideration the origin of the excrements, and the relation they bear to the food, it was not astonishing that their effect was ascribed to a remnant of vital power which should qualify them to increase the vitality in plants. Ascribing their influence on the fertility of the fields to an incomprehensible occult cause, it was forgotten that every force has its material substratum; that with a lever, in a mathematical sense, which possesses

no extension and gravity, no effect can be produced, no burden raised.

Guided by experience, which is the fundamental basis of all inductive science, and which teaches us that for every effect there is a cause, that every quality, as, for instance, the fertility of a field, the nourishing quality of a vegetable, or the effect of a manure, is intimately connected with and occasioned by something which can be ascertained by weight and measure; modern science has succeeded in enlightening us on the cause of the fertility of the fields, and on the effects which are exercised on them by manure.

Chemistry has shown that these properties are produced by the composition of the fields; that their fitness for producing wheat or some other kind of plants bears a direct proportion to certain elements contained in the soil, which are absorbed by the plants. It has likewise shown that two fields, of unequal fertility contain unequal quantities of these elements; or that a fertile soil contains them in a different form or state from another, which is less fertile. If the elements are contained in the soils in sufficient quantities, it produces a rich crop; if it is defective in one of them only, this is shown very soon, by the impossibility of growing in it certain kinds of plants.

Moreover it has been proved with certainty what relations these elements of the soil bear to the development of the plants. Chemical analysis has demonstrated that a certain class of these elements is contained in the seeds; others in different proportions, in the leaves, roots, tubers, stalks. They are mineral substances, and as such, are indestructible by fire, and consequently remain as ashes after the incineration of the plants or of their parts. Many of these elements are soluble in pure water, others only in water containing carbonic acid, as rain water; all were absorbed from the soil by the roots of the plants in a dissolved condition. It has been shown that, if in a field, those elements which remain after the incineration of the grain or seeds, are present in an insufficient quantity, no wheat, no barley, no peas,—in a word none of those plants can be cultivated on that field which are grown on account of their seeds. The plants which grow on such a field produce stalks and leaves; they blossom but do not bear fruits. The same has been observed regarding the development of leaves, roots, and tubers, and the mineral elements which they leave behind after their incineration. If, in a soil in which turneps or potatoes are to be cultivated, the elements of the ashes of these roots are wanting, the plants bring forth leaves, stalks, blossoms, and seeds, but the roots and tubercles are imperfect. Every one of the elements which the soil gives up to the plants is in a direct quantitative proportion to the production of the separate elements of the plants. Two fields, which, under otherwise equal circumstances, are unequally rich in mineral elements of the grain, produce unequal crops. One containing them in larger quantity produces more than another containing them in less. In the same manner, the capacity of a soil to produce tuberculous plants, or such which have many leaves, depends upon its amount of the elements of the soil which are found in the ashes of those plants.

It results from this with certainty, that the mineral substances which are furnished by the soil, and which

are found again in the ashes of plants, are their true food; that they are the conditions of vegetable life.

It is evident, that from a field in which different plants are cultivated, we remove with the crop a certain quantity of these elements; in the seeds those mineral parts which the soil had to provide for *their* development, and in the roots, tubercles, stalks, and leaves, those elements which are necessary for *their* production. However rich the field may be in these elements, there can be no doubt that, by several cultures, it becomes more and more impoverished; that for every plant a time must arrive when the soil will cease to furnish, in sufficient quantity, those elements which are necessary for a perfect growth. Even if such a field, during many subsequent years, produced twenty-five or thirty fold the amount of the seed; for instance, of wheat, experience shows that the crop gradually decreases, until at last the amount will be so small that it approaches the plant in its wild state, and would not repay the cost of cultivation.

According to the unequal quantity in which the mineral elements of grain, tubercles, roots, seeds, leaves are contained in a soil, or according to the proportions in which they may have been removed in the crop, the land may have ceased to be fertile for roots and tubercles, but it may yet produce good crops of wheat. Another may not produce wheat, but potatoes and turneps may thrive well in it. The mineral substances contained in a fertile soil, and serving as food to the plants, are taken up by them with the water, in which they are soluble. In a fertile field they are contained in a state which allows of their being absorbed by the plant and taken up by the roots. There are fields which are rich in these elements, without being fertile in an equal proportion; in the latter case they are united with other elements into chemical compounds, which counteract the dissolving power of water. By the contemporaneous action of water and air,—of the oxygen and carbonic acid of the atmosphere,—these compounds are decomposed, and those of their constituent elements, which are soluble in water, but which had been insoluble by the chemical affinity of the other mineral substances, re-obtain the property of being absorbed by the roots of the plants.

The duration of the fertility of a field depends on the amount of the mineral aliments of plants contained in it, and its productive power for a given time is in a direct proportion to that part of its composition which possesses the capacity of being taken up by the plant. A number of the most important agricultural operations, especially the mechanical, exercise an influence on the fertility of the fields only thus far, that they remove the impediments which are opposed to the assimilation of the mineral food into the vegetable organism. By plowing e. g., the surface of the fields is renewed and made accessible to air and moisture. The nutritious elements contained in the soil in a latent state, acquire by these operations, the properties necessary for their transmission into the plants. It is easy to conceive the useful influence which, in this respect, is exercised on the produce of the fields by the care and industry of the farmer. But all these labours and efforts do not increase the amount of mineral elements in the field; in rendering soluble in a given time, a larger quantity of the insoluble substances, and obtaining by these means a richer crop—the time is merely hastened, in which the soil becomes exhausted.

The experience of centuries has shown that, with the help of manure, of the excrements of animals and man, with which we supply those fields which have ceased to produce crops of grain, &c., serving as food for man and animals, in a sufficient quantity, the original fertility can again be restored; an exhausted field which scarcely yielded back the seed, is made to produce a twenty and more fold crop, according to the proportion of the manure provided.

Regarding the mode of action of the manure, it has been observed, that all excrements do not exercise an equal influence on plants. The excrements of sheep and cattle, for instance, increase in most fields the crop of roots and herbaceous plants to a far greater degree

than those of man and birds, (guano.) The latter act far more favorably on the production of the cerealia, especially if they are added to the animal excrements, and are given to the fields at the same time.

A field, for example, which has lost its fertility for potatoes and turneps, but on which peas and beans still thrive, becomes far more fertile, by a supply of the excrements of horses and cows, for a new crop of potatoes and turneps, than by manuring it with the excrements of man or with guano.

The most accurate experiments and analyses have pointed out that the excrements of man and animals contain those substances, to the presence of which the fertility of the soil is due. The fertilizing power of manure can be determined by weight, as its effect is in a direct ratio to its amount in the mineral elements of the food of plants. The truth of the result of these chemical analyses must be evident to every one who inquiries into the origin of excrements.

All the excrements of man and animals are derived from the plants of our fields; in the oats and hay, which serve as food to the horses, in the roots which are consumed by a cow, there are a certain quantity of mineral ingredients. A horse, in consuming 15 lbs. of hay and 4½ lbs. of oats per day, consumes 21 ounces of those substances which the hay and the oats took from the fields; he consumes annually 480 lbs. of these constituent elements of the soil, but only a very small portion of them remains in his body. If a horse during one year, increases 100 lbs. in weight, this increase contains only 7 lbs. of those mineral substances which were contained in the food. But what has become of the 473 lbs. which we cannot detect in his body?

The analysis of the fluid and solid excrements which the horse gives out daily, shows that the ingredients of the soil which do not remain in the body of the animal are contained in its excrements; it shows that in an adult animal, which from day to day does neither increase nor decrease in weight, the amount of the mineral ingredients of the excrements is equal in weight to the mineral ingredients of the food.

As with the horse, so it is with all animals. *In all adult animals the excrements contain the ingredients of the soil according to the quantities and relative proportions in which they are contained in their food.*

The mineral substances of the food which have remained in the body of the animals, and served to increase their weight, are found again in the bones and excrements of man who consumes the flesh of these animals.

The excrements of man contain the elements of the soil, of bread or of grain, of vegetables and meat.

These discoveries explain, in a most simple and satisfactory manner, the fertilizing effect which manure produces on our fields.

It is now obvious why manure renders again fertile the exhausted fields; why, by its means, their productiveness can be augmented; why the latter is in a direct ratio to the quantity of manure administered.

The exhaustion of the soil by subsequent crops,—its decrease in fertility,—is produced by the gradual removal of the mineral elements, in a soluble state, which are necessary for the development of our cultivated plants. By a supply of manure they are again restored to that state suited to serve as nourishment to a new vegetation. If the supply of the removed elements of the soil, by means of manure, be sufficient; if the quantity taken away be restored, the original fertility re-appears; if the supply be greater, the produce increases; a defective supply gives a smaller produce.

It is now explained why the different kinds of manure exercise an unequal effect upon the fields.

The excrements of man, and the guano containing especially the mineral ingredients of grain and meat, exercise far greater influence on the amount of produce in grain in a field in which these ingredients are wanting, even if those of the leaves and stalks are present in sufficient quantity, than the excrements of an animal which feeds on roots or green fodder. The excrements of the latter contain the mineral elements of the leaves, stalks, and roots, in prevailing quantity, and



have a greater value for the production of roots and foliaceous plants than those of man or of birds, which contain only a small quantity of those mineral substances which they require for their development.

If we compare, for instance, the composition of guano with the excrements of the cow—solid and fluid excrements in the same state of dryness—it is found, that in an equal weight, the latter contain five to seven times more of the mineral ingredients of turneps and potatoes, than the former. If, in a soil, which is deprived of all these mineral substances, we wish to force a crop of turneps by means of guano, we require at least five times more of guano than dung of cattle.

The same thing happens, though *vice versa*, if we wish to produce a rich crop of grain by means of animal excrements; in this case, one part of guano and five parts of animal excrements produce the same effect, as 13.15 parts of animal excrements.

To understand the proper meaning of these numerical proportions, it is sufficient to mention, that 400 pounds of bones contain as much phosphoric acid as 1000 pounds of wheat; these 400 pounds of bones can furnish sufficient phosphoric acid to 8 acres.

If we take the importation of bones into Great Britain, in the last ten years, to amount to one million of tons, enough phosphoric acid has been supplied to the fields for 25 millions of tons of wheat; but only a small proportion of the phosphoric acid of the bones is in a state to be assimilated by the plants and applicable to the formation of the grain. The plants, in order to apply the other far greater part of that phosphoric acid to their formation, must find a certain quantity of alkaline bases besides the bone earth, which are not given to the plants in the bones, because they contain neither potash nor soda.

To have increased the fertility of the fields in the right proportion, 800,000 tons of potash ought to have been added to the one million of tons of bones, in a suitable form.

The same is the case with guano; 60 to 100 pounds of it are sufficient to furnish phosphoric acid to one acre of turneps; but the four to eight fold quantity is required to furnish the turneps with the necessary alkaline bases, and it is still doubtful whether they can be at all provided with the latter, by means of the salts with alkaline bases, which the guano contains.

At a time, when the necessity of the mineral substances for the growth and development of the plants, and the direct relation which the effect of manure has to its amount of the same substances, had not been ascertained, a prominent value was ascribed to the organic matters which it contains. For a long time it was thought that the produce of a field of those substances, containing nitrogen, which serve as food for man and animals, stood in a direct proportion to the nitrogen contained in manure. It was believed that its commercial value, or its value as manure, might be expressed in per cents by its proportion of nitrogen, but later and more convincing observations have induced me to contradict this opinion.

If the nitrogen and carbonic acid formed by the decay and decomposition of the vegetable ingredients of manure, were the cause of its fertilizing power, this ought also to be seen if the mineral substances are excluded. Direct experiments have shown, that the nitrogen of the excrements can be assimilated by the plants, in the form of ammonia; but that ammonia as well as carbonic acid, although it is indispensable for the development of all plants, can accelerate the growth of plants and increase the produce of a field of grain, roots, and tubercles *only*, if at the same time, the mineral ingredients contained in the manure which is applied, are in a state in which they are suited for assimilation. If the latter are excluded, carbonic acid and ammonia have no effect on vegetation.

On the other hand, experience has shown that on many fields the produce which is rich in carbon and ammonia, can be increased to an extraordinary amount without any supply of such matters as furnish these substances.

On fields which are provided with a certain quantity

of marl or slacked lime, or with bone earth and gypsum, substances which cannot give up to the plants either carbon nor nitrogen—rich crops are obtained in many places, of grain, tubers, and roots, entirely in contradiction with the view which ascribes the effect of the manure to its amount of ingredients containing nitrogen or carbonic acid.

To explain this process, which is so opposite to the common opinion, the marl, the lime, the gypsum, the alkalies, and the bone earth were regarded as stimulants, which acted on the plants like spices on the food of man, of which it was believed that they increased the power of assimilation, and allowed the individuals to consume larger quantities of food.

This view is contradicted, if we consider that stimulants mean such substantives as do not serve for the nourishment of the organism or for the formation of organic elements, and can only increase the weight of the body, if at the same time a certain increase of food is given. In supplying the fields with the above mentioned substances, the weight of the plants became increased in all their separate parts, without their having been provided with the quantity of food, which according to theory, was necessary to this extraordinary increase, viz., with carbonic acid and ammonia.

Chemical analysis shows that these so called stimulants are either actual ingredients of manure, as gypsum, bone earth, and the active substances of the marl, or that they are the means by which the mineral elements contained in the soil are resolved into a state adapted for being assimilated by the plants; this is generally effected by the application of slacked lime. They consequently exercise on the vital process of the plants not a mere stimulus like the spices, but are consumed for the development of the leaves, seeds, roots, &c.; they become constituent parts of them, as can be shown with certainty by chemical analyses.

The success which has followed the application of these substances to the fields has explained, in a most striking manner, the origin of the carbon and nitrogen in the plants.

In the marl, in the bone earth, in the gypsum, in the nitrate of soda, no carbon is provided to the fields; and yet, in many cases, the same produce, in some even a higher one was obtained, than by the application of a manure containing carbon and nitrogen. As the soil, after the crop, does not contain less carbonaceous or nitrogenous substances, it is evident that these products which had been obtained without any carbonic or azotic manures, must have got the carbon and nitrogen of their leaves, roots, and stalks, from the atmosphere; it follows therefore that the productiveness of the fields cannot be in proportion with a supply of carbonaceous and azotic substances, but that the fertility depends only on the supply of those ingredients which should be provided by the soil.

The soil does not only serve the purpose of fixing the plants and their roots; it participates in vegetable life through the absorption of certain of its elements. If these elements are present in sufficient quantity and in appropriate proportions, the soil contains the conditions which render the plant capable of absorbing carbonic acid and ammonia from the air, which is an inexhaustible storehouse for them, and renders their elements capable of being assimilated by their organism.

The agriculturist must, therefore, confine himself to giving to the field the composition necessary to the development of the plants which he intends to grow; it must be his principal task to supply and restore *all* the elements required in the soil, and not only one, as is so frequently done; the ingredients of the air, carbonic acid and ammonia, the plants can, in most cases, procure without man's interference; he must take care to give to his field that physical condition which renders possible and increases the assimilation of these ingredients by the plant; he must remove the impediments which diminish their effect.

The favorable influence which bone earth, gypsum, nitrate of soda, exercise on the fields has induced many farmers to the belief, that in applying them they can dispense with manure or with the other elements of the

soil; it requires, however, only little attention to see the great error of this opinion. We observe that the effect of these substances is not equal on all fields; in one place the amount of produce is increased by the lime, by the bone-earth, and by gypsum; in another country, or on other fields, these substances in no way favor vegetation. From this arises the contradictory views of farmers regarding these matters as manures. If one farmer thinks the liming of his fields quite indispensable for rendering them fertile,—another declares that lime produces no effect at all.

The reason of this difference is very simple. The examination of a soil, upon which lime has had no effect, shows that it was already rich in this substance; it further shows that its effect extends only to those kinds of soil in which lime is wanting, or in which it is found in too small a quantity, or in a condition which is not suited to its assimilation by the plant. Lime especially serves for resolving the silicates of alumina (clay,) and consequently it cannot fertilize soils in which clay is wanting, for instance, sandy soils. It must be apparent to every one, that on the calcareous and gypseous fields of France and England one-half per cent. of gypsum or lime can have no influence at all on vegetation. This can be said with equal justice of bone ashes, and of every other mineral substance serving for the nourishment of plants.

If these substances exercise a favorable effect, some of the constituents of the soil or manure are restored, which are indispensable to the nourishment of plants, and which have been wanting in the soil. If this be the case the other bodies, equally necessary, must be present in sufficient quantity. On a field, in which sulphate of lime has acted favorably, and in which clover had been cultivated as fallow without it, the crop was 2200 pounds of clover hay, in which 53 pounds of potash were removed. On the same field, after it had been gyped, 8000 pounds of hay were produced, which contained 191 pounds of potash. If this potash had not been present in the soil, the gypsum would have had no effect,—the crop would not have been increased. On fields, which are richly provided with all the other mineral ingredients, with the exception of gypsum, the latter is applied with the greatest success. But if gypsum is present in the soil, the same effects are produced by ashes and lime, as is the case in Flanders. On fields, in which phosphate of lime is wanting, bone ashes increase the produce of grain, clover, or grass, and on argillaceous soil, lime produces a decided improvement. All these substances act only on those fields which are defective in them, and if the other elements of the soil are present. The latter cause the former to come into action, and *vice versa*. The farmers, who thought that by using lime, gypsum, bone earth, &c., they might dispense with animal manure, very soon observed that their fields deteriorated. They observed that after a third or fourth successive manuring with those simple substances the produce decreased; that, as is the common expression, the soil became tired of the manure, that at last the field scarcely produced the seed.

It is evident from this, what is the action of the mineral elements in the soil. If in fact, in the first years, the produce of the soil had increased by the application of bone ashes, or by a single element of the manure—if this increase was dependant on the amount in the soil of the other mineral elements, a certain quantity of those was annually taken up by the plants and removed in the harvest, and a time must at last arrive in which it is exhausted by the repeated removal; the soil must become barren, because of all removed elements, only one or the other, and not all of them, in a right proportion, have been restored.

*The right proportion of the supply is, however, the only true scientific basis of agriculture.*

If we subject the fluid and solid excrements of men and animals to an exact analysis, and compare the elements of them according to their weight, some constant relations between these elements impress themselves upon the mind, the knowledge of which is of some importance.

If the excrements of an animal are collected with

some care and left to themselves for some days, their nitrogen appears to have been converted more or less perfectly, into ammonia. In the fluid excrements, in the urine, the salts of the food, which are soluble in water, are found in the form of alkaline carbonates, or of sulphates, phosphates, and other salts, with alkaline bases. In the solid excrements or feces, silica, if it was contained in the food, earthy carbonates, and phosphates, are the principal ingredients.

The quantity of alkaline carbonates bears a certain proportion to the amylum, sugar, pectine, or the gum of the food. The urine of an animal which has been fed with potatoes or turneps, is rich in alkaline carbonates; the potatoes, however, consist principally of amylum; the chief ingredients of the turneps are sugar and pectine. The urine of a horse, which has been fed with hay and oats, is comparatively poor in alkalies, if compared with the former.

It is further shown, that the ammonia or the nitrogen of the excrements bears a certain proportion to the phosphates; the azote increases or decreases with the quantity of the phosphates in a manner that both can serve, as a measure for each other, although not quite as an accurate one. It is not quite accurate, because the gum and the amylum also contain a certain, although small, quantity of phosphate of lime, as has been proved in my laboratory.

The ammonia of the excrements is of course derived from the nitrogenous substances in the food; the phosphates are likewise constituents of the latter. In the composition of the food an equally constant proportion exists between both. A given weight of gluten or casein in peas or in grain always corresponds with a certain weight of phosphates; if the grain or the vegetable is rich in those azotic products of vegetable life, it is also rich in phosphates; if it is deficient in them, the quality of the latter decreases in an equal ratio.

As the amount of nitrogen in manure is a measure for its amount in phosphates, and as manure contains besides these also the other ingredients of the soil which are required by the grain or by the other vegetables for their development, and taken up by them from the soil, it is easily conceived what was the cause of the error in regarding the azote of the manure as the principal cause of its efficacy. The reason was, that the ammonia of the manure is always accompanied by the mineral elements which affect its nourishing qualities, because they render its assimilation into the organism of the plant and its transition into a nitrogenous constituent possible. Without phosphates, and without the other mineral elements of the food of plants, the ammonia exercises no influence whatever upon vegetable life.

If it has been shown that the fertility of the soil depends on certain mineral substances; if the restoration of the fertility of exhausted fields by means of the excrements of man and animals depends upon their proportions of these matters; if the effect of the manures *accelerating* the vegetation depends upon their proportions of ammonia, it is clear that we can only dispense with the latter when we provide *all* efficacious elements exactly in those proportions and in that form most proper for assimilation by the vegetable organism in which they are found, in the most fertile soil or in the most efficacious manure.

According to our present knowledge of the effect of the constituent parts of manure, I feel convinced that it is indifferent to the plants from which source they are derived. The dissolved apatite (phosphate of lime) from Spain, the potash derived from the felspar, the ammonia from the gas works, must exercise the same effects on vegetable life as the bone earth, the potash, or the ammonia, which we provide in manure.

We live in a time when this conclusion is to be subjected to a comprehensive and accurate trial, and if the result corresponds with the expectations which we are entitled to make, if the animal excrements can be replaced by their efficacious elements, a new era of agriculture must begin.

I invite the enlightened farmers of England to unite with me for that purpose, and to lend me their aid.



Whatever may be the result of these experiments, it is necessary for the future prosperity of agriculture that they be made. They will enrich us with a number of valuable facts—we shall ascertain where we have wasted efficacious matters in the common course of farming—we shall acquire an exact knowledge of those substances which are necessary, and of those which are dispensable.

For a number of years myself and many young talented chemists have been occupied with the analyses of those mineral substances, which are constituent elements of our plants of culture, and with the examination of the excrements of man and animals, well as of a great number of soils acknowledged as fertile. These labors have been laid before the scientific world long since, but only a very confined application has been made of them in agriculture.

The farmer is by his position not in the condition to procure and to command the efficacious elements necessary for the restoration and increase of the fertility of his fields in a right proportion and suitable form. For this purpose, science and industry must combine their aid.

I have been fortunate to remove the difficulties which are opposed to the application of a mere mixture of the elements of manure. If we employ the different elements of manure exactly in those proportions in which they are necessary according to experience, for a rich crop of wheat, peas, turnips, potatoes, and if, at the same time, we leave them in their common state, they do not produce that effect which we might have expected; the cause of this is, that the different elements of manure possess a very unequal solubility, the ammonia evaporates, the soluble elements are carried off by the rain, and the effect is more in proportion with the amount of those ingredients of the manure which are less soluble.

I have found means to give to every soluble ingredient of manure, by its combination with others any degree of solubility, without altering its effect on vegetation. I give, for instance, the alkalies in such a state as not to be more soluble than gypsum,\* which as is well known, acts through many years, as long as a particle of it remains on the acre.

The mixture of the manure has been adapted to the mean quantity of rain in this country; the manure which is used in summer has a greater degree of solubility than that used in winter. Experience must lead to further results, and in future the farmer will be able to calculate the amount of produce of his fields, if temperature, want of rain, etc., do not oppose its coming fairly into action.

I must, however, observe that the artificial manures in no way alter the mechanical condition of the fields, and they do not render a heavy soil more accessible to air and moisture. For such fields, the porous stable manure will always have its great value; it can be given together with the artificial manure.

All manure which is to be used during next winter contains a quantity of ammonia corresponding with the amount of nitrogen in the grain crops which are to be grown. Experiments, in which I am at present engaged, will show whether in future times the costs of this manure can be greatly lessened by excluding half or the whole amount of ammonia.† I believe that this can be accomplished for many plants, as for clover and all very foliaceous vegetables, and for peas and beans; but my trials are not so far advanced as to prove the fact with certainty.

Giessen University, 1845.

\* Equal parts of carbonate of potash and carbonate of lime, (chalk) melted together will dissolve in 460 parts of water. Increase of chalk lessens, while a larger proportion of the other ingredient increases the solubility. E. N. H.

† Dr. Kroeker, in this laboratory, has determined in the course of the last term, the ammonia present in moist soils of great varied physical properties. The results are still unpublished; but he remarked to me one day that if the ammonia per centage of the soil then in hand, be estimated as constant through a depth of one foot, the ammonia in an acre was about 8,000 lbs!

Even in sand destitute of soluble mineral salts, and nearly so of organic matter he found a per centage that was startling. Indeed

#### INDIAN CORN FOR FODDER.

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LUTHER TUCKER, Esq.—Your correspondent H., of Ohio, inquires if there is no easier mode of curing corn stalk fodder than “to reap the stalks, bind them in small bundles, and stack them up?” I offer my experience for what it is worth. Three years ago this month, I sowed the first corn I ever undertook to raise for fodder. The field contained about two acres. I began sowing broadcast, and having sowed about half the field, I happened to think that it would be as well to experiment a little, and accordingly struck out the rest in drills,  $2\frac{1}{2}$  feet apart, and sowed the corn thick in the drills. By the first of July the weeds were so thick among that which was sown broadcast, that one could hardly tell what crop was the rightful proprietor of the soil, while that which was sowed in drills, having been cultivated once or twice, was growing vigorously. So I put the plow in, and turned under the whole crop, which was sown broadcast, and then struck out the land in drills and sowed again. The rest was cut when in tassel, and I experienced great difficulty in curing it, and after I thought it was perfectly dry it was put in the barn, and in a week I had to take it all out and spread it again. The second planting, however, was not in tassel till frosts came, and indeed, it was a little nipped by frost before it was cut; but the cold weather prevented its heating, and after lying three days after cutting, it was put in the barn, and kept perfectly well all winter. Since then I have followed this plan, and have had no farther accident. I plant from 5th to 10th July, in drills  $2\frac{1}{2}$  feet apart; keep the weeds under till the corn shades the ground, after which they give no trouble; cut about the last week of November, with a stalk knife, (grasping an armful, cutting them off and laying them in the rows.) I leave them thus for three or four days, and then either put them in the barn or stack them for the winter.

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#### GRAFTING GRAPE VINES.

Another correspondent inquires about grafting grape vines, and as I have had some experience in that also, I will give it, and think I can convince him that it requires no great skill or nicety. In January, 1844, I was setting out foreign vines in a green-house, and thinking I might gain time by grafting, I went into my vineyard and selected twelve Isabella vines of not less than an inch in diameter at the surface of the ground. These I took up with the greatest care and planted just in front of my green-house. I then carried the stems through the foundation and cut them off inside, about three inches under ground; split them and inserted two scions in each. I did not bind them, but simply pressed the earth tightly about them, and every one took. They showed plenty of fruit the next year; but I only allowed them to bear a few bunches, which they ripened well. This year they are growing with wonderful vigor, and are covered with fine bunches of grapes, while the young vines planted at the same time will not be ready to bear these two years. Since then I have grafted vines in every month from February till June, and with equal success, and therefore conclude that if grafted under ground there need be no difficulty about it. H. W. S. C.

Oatlands, Burlington, N. J., May 20, 1846.

the sum of his results is that the ammonia is in nearer relation to the moisture than to anything else.

I found ammonia in the glaciers that come down from heights of 14,000 feet above the level of the sea—from near the summit of Mt. Blanc. Even at that height the ammonia is still in quantity that may be weighed. Every rain and snow storm brings this ingredient to the earth. Every soil that can retain its moisture will also retain the ammonia that descended with it. Hence one cause of superiority of a soil containing much decayed vegetable matter or much humus. It enables it to hold moisture, as well as furnish a source of carbonic acid. A rod dipped in muriatic acid and held near the surface of a handful of moist soil will cause white fumes to rise, occasioned by the combination of the ammonia with the muriatic acid. A gentle breath directed along the surface of the earth experimented with, will render the fumes more apparent.

E. N. H.

## VIRGINIA FARMING.

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L. TUCKER, Esq.—Being a constant reader of the *Cultivator*, and not finding many communications from this part of the valley of Virginia, I thought it would not be intruding too much on your time to read an account of our farm, which is called the "Plains." This farm was taken up by a Mr. James Wood, and patented on the 12th day of January, 1746, exactly one hundred years ago this day. It was sold some four or five times, until my father bought it in the year 1829. My older brother moved on it in the year 1833, and was on it until 1835. He then bought a farm adjoining the town of New-Market, and I moved to this place, where I have been since. When my father bought this farm it was in very bad order; there was not a good pannel of fence on it, and not a single gate; the roof of the barn had been blown off by a storm and the barn-yard was only fenced in by an old rail fence, and not an acre of clover was on the place. The land was worked on the skinning system." The barn-yard was so full of old manure that it was almost impossible to get to the barn, and some of the fields were so poor that one of them produced only *four bushels* of rye per acre, in the year 1837. The land lies well for cultivation; it is not very hilly, but there are about 100 acres of it a black marl bottom, and about 150 acres of upland, which is a sandy clay; there are also about 165 acres of wood land attached to it. We have run a lane through the centre of the farm so that we can let the cattle run from the barn-yards to any of the fields. We have hung 32 gates

to the yards, lane, and fields, so that we can get about without ever tearing down any fence. The gates are made on the plan that you published in your January number, page 18. There is a spring on the adjoining farm which runs through our bottom land and empties into the Little Shenandoah river that passes along the edge of our farm. We have a merchant mill on the bank of the river which is run by the spring branch; we have also a saw mill which is run by the river. The spring branch runs through the edge of the cattle yards, so that the cattle can get water at all times. The lane also has communication with the spring branch, so that the cattle can come from any of the back fields to the branch for water. We have graded a greater part of the lane, and have turnpiked nearly all the low places, so that we can get along at all seasons of the year. We have adjoining the barn three yards, with sheds, for the cattle, one yard with a shed for the sheep, and a horse stable with a large yard, in which is a shed for wagons, cariole, cart, and farm implements, also two small buildings for saddles and tools. The saw-mill is only about 100 feet from the cattle yards, so that we can easily haul all the saw dust to the horse stable and cattle yards, which we find a very good article for absorbing the liquids of the manure. We also find that tan bark is a very good article for the same purpose; we therefore have adopted the plan of bringing a load along when we take corn, flour, &c., to New-Market, which is only three miles from this place. We have improved the land very much with clover, plaster, ashes, and manure, and a proper rotation of crops. We find that the following rotation is very suitable for this farm.

| First Year.       | Second Year. | Third Year. | Fourth Year.                   | Fifth Year. | Sixth Year.     |
|-------------------|--------------|-------------|--------------------------------|-------------|-----------------|
| Corn with Manure. | Oats.        | Wheat.      | Clover with plaster and ashes. | Ditto.      | To be pastured. |

| Seventh Year. | Eighth Year. | Ninth Year.                              | Tenth Year.                    | Eleventh Year. | Twelfth Year.   |
|---------------|--------------|--|--------------------------------|----------------|-----------------|
| Fallow.       | Wheat.       | Rye or bearded wheat, with short manure. | Clover with plaster and ashes. | Ditto.         | To be pastured. |

By the above system you will find that we have six fields in clover, three in wheat, one in oats, one in corn, and one in fallow. The best parts of the four clover fields are mowed, and the other is left to rot on the ground; the two other clover fields are pastured but lightly, as we send all our young cattle and sheep to our mountain farm, on the head of the river. We find that plaster and ashes have a very good effect on the upland, but on the marl bottom it does not have any effect. The upland is very good for clover, and the bottom is very suitable for timothy. The upland had a considerable quantity of loose rocks, but we hauled nearly all of them into the lane, and into several sink holes and dragged earth over them with the road scraper. There were also a great many rocks in the fence corners that were hauled there some years ago; we also hauled hauled them into the sink holes.

We have a pond at the mill which we have cleaned out several times, and hauled the mud, composed principally of marl, on the wheat fields, and harrowed it in with the wheat. It has proved a very good article on the upland, answering better than stable manure in the adjoining field. The last year we hauled out 131 four horse loads of the mud, 154 loads of barn yard manure in the spring, and 84 loads in the fall.

The year 1845 was very dry in this part of the valley, so that all summer crops were very short, but the wheat yielded tolerably well. The following was the quantity of hay, &c., raised on the Plains farm in the year 1845.

20 wagon loads of hay; 672 bushels of oats; 31 bush. of rye; 113 bush. potatoes; 650 corn; 800 wheat.

We have 119 sheep, 35 head of cattle, and six horses. We have a corn fodder machine which is run by a two horse power; It is the middle size of "Eastman's Patent." It was made too weak, so that we had to take it through a thorough repair, but now it does tolerably well. We have large mangers in the cattle sheds, where we feed the cut corn fodder in the evening, and straw in the morning. The sheep get straw in racks in the morning, and hay in the evening, but when the snow is off the ground they are permitted to run to the field that is to be put into corn in the spring; we then give no hay, but only straw. We also give a bucket full of oats to the 119 head, every evening and morning, in small mangers. The sheep-racks are made on the plan that the "Economs" have them in Germany. We have tried the "feeding boxes," but do not like them as well as the racks. When the manure is hauled out of the sheep-yard in the spring, we plow it up, and plant cucumbers, melons, beans, &c., which do very well, as the ground gets very rich by the sheep manure.

By attending to the sheep on the above plan we have very good luck with the lambs. Last spring we raised 29 lambs out of 32. Our sheep are grade Saxons, which seem to suit our climate very well. We put the rams to the ewes the latter part of October, so that the lambs will come the latter part of March, which is the best time for this part of the country; the lambs will then be able to travel to our mountain farm, after the ewes are sheared, which is the first week in May. Our young cattle are also then taken to the mountains, so that we



have but little stock on the "Plains" farm all summer.

SIRAM P. HENKEL.

Plains Mills, Rockingham, Va., 1846.

[The above communication has been mislaid, or it would have appeared before.—ED.]

#### NUTRITIVE PROPERTIES OF PEAS AND BEANS.

Experience and observation induced us, long since, to form a very favorable opinion of the nourishing properties of peas and beans. The hardy lumbermen of Maine, in laying in a stock of provisions for their winter support while engaged in cutting down the forest, never fail to secure a large supply of these articles; and we have been repeatedly assured by men engaged in that laborious business, that their ability to labor was greater when their food consisted in a large degree of peas and beans, seasoned with fat pork, than when feeding on other substances.

Oats and peas are known in some parts of our country, as forming the very best food for hard-working horses. And we have formed, also, a favorable opinion of peas and beans for fattening. We cannot, however, say that their value is not greater for laboring, than for fattening animals—as chemical analysis seems to indicate—but we know that sheep have been fattened rapidly on beans and bean meal, and we have often seen hogs well fattened on meal of oats and peas ground together in the proportion of one part peas to two of oats, by measure; which would make the proportion by weight about equal. We never heard any objection to the quality of pork so made.

But we think careful experiments are necessary to show the relative value of peas and beans compared with other substances, (Indian corn for example,) in feeding different animals for different purposes. If peas and beans are, as is contended by some chemists, better than corn for the production of wool, let it be practically demonstrated;—if corn is better for making mutton, let it be shown—let us have FACTS, and no theories but what are based on them.

The value of peas and beans for human food is strongly set forth in the following extracts, which we take from an article by Dr. BUCKLAND, published in an English paper. He remarks that the seeds of leguminous plants, "especially peas and beans, are loaded with the constituents of muscle and bone ready prepared to form and maintain the muscular fibre of the body of animals." "Hence," he says, "the rapid restoration of the shrunk muscle of the exhausted post-horse by a good feed of oats and beans. Hence the sturdy growth of the Scotch children on oat-cake and porridge, and of broth made of the meal of parched or kiln-dried peas; on this a man can live, and do good work, for 1½d. a day; while the children of the rich, who are pampered on the finest wheat flour, (without the pollard or bran,) and on sago, rice, butter, and sugar, become fat and sleek, and would often die, as sometimes they do, from such non-nutritious food, but for the mixture of milk and eggs they eat in cakes and puddings.

"An old laborer at Axbridge, complained to his master, Mr. Symons, (who died in 1844,) that laborers feeding now on potatoes, could not do so good a day's work now as when he was young, and when they fed on peas. 'Peas, sir,' said he, 'stick to the ribs.' He uttered the very truths of organic chemistry.

"In beans we have vegetable 'caseine,' or the peculiar element of cheese. What is more restorative or more grateful to man, when fatigued by labor or a long walk? As we heat or toast it, it melts, and ere it reaches our mouth, is drawn into strings of almost ready-made fibre; and who has ever dined so fully as not to have room left for a little bit of cheese?

"What is so restorative as beans to the jaded hack or the exhausted race-horse? Sepoys on long voyages live exclusively on peas. The working and healthy man and beast want muscle, and not fat; fat encumbers and impedes activity and every excess of it is disease. We seldom see a fat laborer or a fat soldier, except

among the sergeants, who sometimes eat or drink too much.

"Charcoal, which next to water, forms the chief ingredient in potatoes, is subsidiary to life, though not to strength. The same is true of the charcoal, which is the main ingredient of rice, sago, sugar, butter, and fat. The woman at Tutbury, who pretended to fast for many days and weeks, sustained life by secretly sucking handkerchiefs charged with sugar or starch. During the manufacturers' distress in Lancashire, five years ago, many of the poor remained in bed covered with blankets, where warmth and the absence of exercise lessened materially the need of food. When Sir John Franklin and his polar party travelled on snow nearly a fortnight without food, they felt no pain or hunger after the second day; they became lean and weak by severe exercise and cold, but sustained life by drinking warm water and sleeping in blankets with their feet round a fire; alas, a knowledge of such facts may become needful and useful in the approaching winter.

"It has been already stated that the most nutritious of all vegetable food is the flour of peas, which was the staple food in Europe before potatoes. The flour of kiln-dried peas stirred in hot water makes a strong and pleasant Scotch brose, on which alone a man may do good work. Barrels of peas brose flour may be brought from Scotland, or prepared in England wherever there is a malt-kiln.

"In England, pea-soup and peas pudding are still a common and most nourishing food. Our forefathers and their children, we know from nursery rhymes, ate

'Peas pudding hot, peas pudding cold,  
Peas pudding in the pot, and nine days old.'

"Let us for a part of this and next year once live as they lived 300 years ago. Boiled or fried slices of peas pudding are not unsavory food; and what boy would not prefer parched peas to nuts?

"Oat cake is the bread of all Scotland, and of much of Ireland, and of the North of England; and oatmeal made into broth and porridge is the universal and almost the only food of highland children. Let those who have quailed under the charge of a highland regiment tell the results.

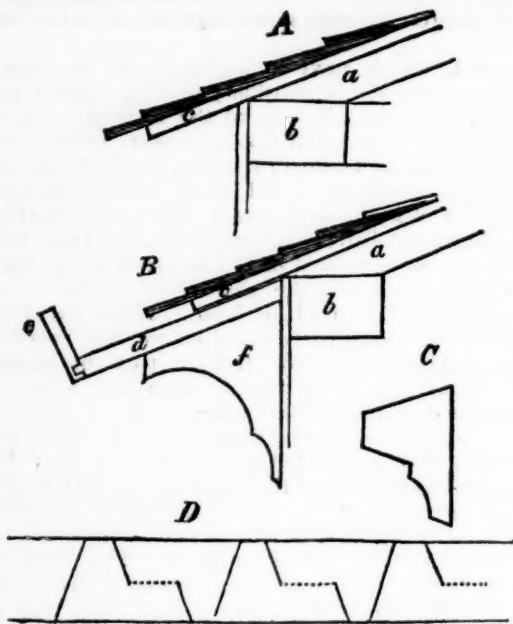
"Bread made of rye is the chief food of farmers and laborers in Germany and the north of Europe; it is of a dark color, and little used with us, but it is very nourishing, and in time of scarcity is a good substitute for wheat.

"Indian corn or maize is the food of man over a large part of the world, and makes bread and cakes, not very palatable to us, but better than nothing! in times of scarcity."

Dr. B. places a low value on our much-esteemed Indian corn,—admitting only, that it makes "bread and cakes" which are "better than nothing in times of scarcity!" The taste for different articles of food is undoubtedly formed in a great degree by habit. The Esquimaux relish the raw flesh and blubber of the seal—our American Indians their parched corn and bear's oil—the Scotchman his broth of oats or peas, or bread made from those articles—while we in this country, who have duly learned the "art and mystery" of cooking Indian corn, consider it equally as "palatable" as any other article of bread-stuffs.

DESTROYING WEEDS.—S. W. Jewett, of Weybridge, Vt., says he finds nothing equal to sheep for destroying ox-eye daisy, johnswort, and other troublesome weeds. "They must be stocked down early, if covered with johnswort, the plant being poisonous to those animals after it obtains rank growth."

SUCCESSION OF APPLES.—An eminent cultivator of fruit near Boston, gives the following as a good list for a succession, commencing with the earliest:—Heath's Early Nonsuch, Early Harvest, Porter, Gravenstein, Fameuse, Greening and Baldwin, and the Russets. He also adds, as fine, Red Astracan, Williams' Favorite, St. Lawrence, White Seek-no-farther, Yellow Bell-flower, Lysecom, Canada Reinette, and Murphy. And of sweet apples, Bough, Sugar Sweet, French Sweet, Danvers' Sweet, Gardiner's Sweet, and Seaver Sweet



EVE TROUGHS.—(Fig. 66.)

A good and cheap eve trough for farmer's dwellings and out houses, is very much wanted. Those made of hewn timber hollowed out are costly. Zinc plate, placed on the roof, turned up in front by a strip of timber, and shingled on, are neither good-looking nor very valuable.

In a laborer's cottage, lately erected, we adopted the mode represented in section in the annexed figure, and found it by far the cheapest that ever came to our knowledge, and quite as good and neat in appearance as any. Fig. A, represents the eaves of a roof of the very simplest construction, *a* being the lower end of the rafter, resting on the plate *b*, and covered by the roof-board *c*, projecting a few inches. Fig. B, exhibits the same roof with the eve trough attached; which is done by placing a sound and durable inch and a half plank *d*, (or even an inch board will do,) directly under the roof board, and projecting several inches beyond it, supported by a common cornice,—or more cheaply, and, if the architecture accords, more gracefully, by brackets, as represented by *f*. The narrow strip of board or plank, *e*, is added by matching, forming the trough. A coat of hot tar, or better, of good paint, finishes the trough. It would, however, be better, and would cost comparatively little, to get a piece of tin or zinc, a few inches wide, and equal in length with the house, bent in the shape of this trough and laid into it as a lining. This could be brought in a roll from the tin-shop, and bent and fitted on the spot.

A bracket for support, easily made, is represented in fig. C, which is cut from a plank without waste, as shown by fig. D, where the cross lines show the marks for the saw, and the dotted lines the parts separated by splitting.

#### THE POTATO.

In the last number of the Cultivator, I observe an extract from H. R. Schoolcraft's "Report on the Iroquois," in which the opinion is given that "the potato was certainly indigenous" to this region; and that Sir Walter Raleigh took it from Virginia to Europe under the original name of *openawk*. I believe however, that we have no facts sufficient to warrant these conclusions. None of our botanists have marked down the potato as one of our indigenous plants; and it is not presumable that one of such magnitude and importance could remain unknown to them, if it had been indigenous.

But it will be proper to inquire if the cultivated potato and the "openawk" are identical? In the Library of Entertaining Knowledge, part 29, page 125, we have the following description of the latter from Thomas

Heriot's account of Virginia, who was amongst the first settlers of that colony. "The roots of this plant are round, some as large as a walnut, others much larger—they grow in damp soils, many hanging together as if fixed on ropes." Now it is clear that this description will not apply to the common potato, but most exactly to *Apios tuberosa*, which Dr. Barton \* calls the "Wild Potato-Vine"—which Elliot † says "formed an article of food to the aborigines"—and which Pursh ‡ asserts to grow sometimes "to an enormously large size." We have no other indigenous plant that will agree with Heriot's description; and he adds that the tubers "are good either boiled or roasted." So are those of *Apios tuberosa*. It therefore appears conclusive to me that in the case referred to, it has been mistaken for the common potato.

D. T.

Cayuga Co., 6 mo. 13, 1846.

#### BUTTER-WORKER.

MR. TUCKER—I have seen in your June Cultivator, a communication over the signature of Robert White, Jr., giving a description of his Butter-Worker. He states that having seen a description in your paper of one exhibited at Worcester, he wrote there, requesting a more particular description, but received no reply. In December, 1844, I received a letter from Mr. White, requesting the information mentioned, and in a few days after wrote to him, giving a minute description of its several parts. I regret that he did not receive the answer sent him, as I am not willing to be considered as wanting in that courtesy that is due from one farmer to another. I can only account for the non-reception of my letter by the belief that it has arisen from misdirection. I addressed him at Shrewsbury N. J., from whence his letter was written, and his late communication bears date from New-York. I should, however, not have troubled you with an apology for my imputed neglect, except as it furnishes me with an excuse for offering some objections to the manner of the construction of his machine, which I think may be readily obviated, and the instrument improved. The flutes or creases are too numerous, and so deep that I think they will cause the butter to adhere to the roller, and thereby occasion trouble, particularly when the butter is soft, as it is taken from the churn. Believing my instrument, which has been in use for several years, is more useful than his, although there is some similarity between them. I will give a description, referring to the diagram in your June number, and using the same letters for the same parts; that if any of your subscribers are disposed to make a butter-worker for themselves, they may have, the use of two machines, on which to make such improvements as they may deem expedient.

*A*, a fluted roller, 15 inches long, 6 inches in diameter at the large end next the handle, and 3 inches at the small end; 8 flutes or creases; the creases are alternate hollows and rounds; the depth of the hollows, measured by a straight line on the top of the rounds, is only one-fourth inch, and this has been found sufficiently deep for any useful purpose. My roller has a hole longitudinally through its centre  $1\frac{3}{4}$  inches in diameter, and the handle, *B*, *C*, is of one piece separate from the roller, and on which the roller revolves. The handle *B*, is 16 inches long and 2 inches in diameter from the extreme end to the shoulder against which the roller turns, and 27 inches long and  $1\frac{3}{4}$  inches in diameter from the said shoulder at *E*; the ball *D* is dispensed with, instead of which a hole one-half inch in diameter is made through the small part of the handle, about two inches from the end. *E*, is a perpendicular iron,  $\frac{1}{4}$  inch in diameter, fastened to the table *G*, on which the handle turns, with small holes made through it, in which a wire is passed to keep the handle in place. This will be found equally as good as the ball and socket, and

\* Compendium Floræ Philadelphicæ, vol. 2, p. 82.

† Sketch of the Botany of South Carolina and Georgia, vol 2 p. 232.

‡ Flora Americæ Septentrionalis, page 473.



much more simple. The marble block *I*, is comparatively an expensive part of the apparatus, and by the advice of my tenant's wife, has been laid aside, and a thick board of hard wood has been substituted. She objects that the marble extracts the color from the butter, which has much influence upon the taste of all but the blind.

Several years' use of this butter worker has furnished satisfactory evidence that by it much of the labor of making butter may be saved, and the butter made of a better quality. Under no circumstances should the hands ever be allowed to come in contact with the butter, either in its manufacture or packing.

JOHN W. LINCOLN.

Worcester, June 9, 1845.

#### NITROGENOUS MATTER IN OATS.

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MR. TUCKER.—I notice in the April number of the *Genesee Farmer* for 1846, mention of some apparent mistakes in Prof. Johnston's comparison of flour from oats and wheat. The table given is as follows:

|                       | Wheat.  | Oats.   |
|-----------------------|---------|---------|
| Muscular matter,..... | 10 lbs. | 18 lbs. |
| Fat,.....             | 3 "     | 6 "     |
| Starch,.....          | 50 "    | 65 "    |
|                       | 63      | 89      |

The editor of the *Farmer* says—"if 100 lbs. of fine wheaten flour contain but 63 lbs. of starch, gluten, (muscular matter,) and fat, all told, what shall we call the other 37 lbs. of something, in 100 lbs. of dry flour?"

I think there is undoubtedly a misprint in the quantity of starch given above. The average quantity obtained by Vauquelin, Zenneck, Payen, and others, is between 60 and 70 per cent. To this is to be added the gum, the ash, and a small quantity of woody fibre, beside from 8 to 14 per cent. of water, which is always to be obtained from what is considered the driest wheaten flour or oatmeal.

The editor of the *Farmer* then proceeds to quote the following table from Prof. Johnston;

The grain of wheat contains from 8 to 35 per ct. of gluten.

|          |           |   |
|----------|-----------|---|
| " rye    | " 9 to 13 | " |
| " barley | " 3 to 6  | " |
| " oats   | " 2 to 5  | " |

He then says:—"How wheat, as is well known, can yield from 8 to 35 lbs. of gluten in 100, and oats only from 2 to 5 lbs., and yet oatmeal contain 80 per cent. more *gluten* than wheat flour, passes our comprehension. Indeed the statement is an absurdity."

This paragraph seems entirely founded on a misapprehension of Prof. Johnston's meaning. The above table is intended to show only the proportion of *gluten* alone, not of nitrogenous compounds. It is true that the oat has very little gluten; but it has a body analogous in many respects to the casein of milk, which has been called *avenine*.

The editor of the *Farmer* must be aware that the proteine of Mulder, forms, as it were, the type of a class of bodies precisely similar in composition, with the exception of certain proportions of sulphur and phosphorus; among these, are fibrin, vegetable albumen, the serum of the blood, &c. To this class also belong the gluten of wheat, and the casein or *avenine* of oats. Gluten is composed of proteine 10, sulphur 2; casein of oats, proteine 10, sulphur 1. The casein of oats is therefore fully equal to the gluten of wheat, and the mistake in the above paragraph arises from the supposition that gluten is the only body in the oat which goes to the formation of muscle.

As to the quantity of this substance in comparison with that of the gluten in wheat, Prof. Johnston is no doubt nearly correct. I have found it as high as 22 per cent., though I should be inclined to place the average at 16 per cent. Now though some wheat has been found to yield more than 30 per cent. of gluten, the average of the trials of Vauquelin, and other authorities,

is but little more than 10 per cent.; the advantage is therefore clearly with the oat.

Prof. Johnston is also perfectly correct as to the quantity of fat yielded by the oat, many trials having been made in his laboratory during the two past years. My own trials have all given from 5 to 7 per cent of oil.

As to the comparative value of oatmeal and wheaten flour, I shall perhaps at a future time write more at length; at present I will only say, that experience in Scotland fully bears out Prof. Johnston's analyses.

JOHN P. NORTON.

Farmington, Ct., June, 1846.

#### WOOL-GROWING IN THE MOUNTAINS OF NORTH CAROLINA—WILL IT SUCCEED?

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MR. TUCKER.—In reading Morrell's "American Shepherd" I find the following in relation to sheep husbandry in the mountains of North Carolina, p. 146-7: He says:—"In large districts of the mountainous portions of North Carolina, sheep can be reared at perhaps as little expense as any section of the United States." Then follows an extract from a letter addressed to Mr. Skinner, by the Hon. T. L. Clingman, of North Carolina, designating some of the districts in that state best adapted to wool growing, embraced in the counties of Yancy, Haywood, &c. Mr. C. says, the elevation of Burnsville, the county seat of Yancy, is about 2,900 feet above the level of the ocean, and that the general level of the country is much higher. The climate is represented as being delightfully cool in summer, the mercury seldom rising higher than 70 or 80 degrees. Very little of the country is said to be too rough for cultivation. A large portion, it is said, is a sort of elevated table land, undulating, but not too much broken. "Even," says Mr. C., "as one ascends the higher mountains, he will find occasionally on their sides flats of level land containing several hundred acres in a body. The top of the Roan, the highest mountain in the country except the Black, is covered by a prairie for ten miles, which affords a rich pasture during the greater part of the year. The ascent to it is so gradual that persons ride to the top on horse back from almost any direction. The same may be said of many of the other mountains. The soil of the country generally is uncommonly fertile, producing with tolerable cultivation, abundant crops. What seems extraordinary to a stranger, is the fact that the soil becomes richer as he ascends the mountains. The sides of the Roan, the Black, the Bald, and others, at an elevation even of five or six thousand feet above the sea, are covered with a deep rich vegetable mould, so soft that a horse in dry weather sinks up to the fetlock. The fact that the soil is frequently more fertile as one ascends, is, I presume, attributable to the circumstance that the higher portions are more commonly covered with clouds, and the vegetable matter being thus kept in a cool moist state while decaying, is incorporated to a greater degree with the surface of the earth, just as it is usually found that the north side of a hill is richer than the portion most exposed to the action of the sun's rays."

Now, Mr. Editor, I think that time and experience will teach that the mountains of North Carolina are unsuitable for sheep, especially those portions alluded to by Mr. C., in the preceding extract. I formerly thought with Mr. C., that in time it would become a fine sheep country; but since I have turned farmer, and kept sheep, I think those who embark in the sheep business in that section will be disappointed.

In another part of Mr. Morrell's work, p. 193, he says: "The soil most suitable for sheep is a dry one. It is emphatically an upland animal, and loves the short and varied herbage of hill and mountain slopes, provided the soil is not poachy from an excess of moisture. To no other domestic quadruped is water more repugnant, unless when necessary to lave its thirst, as will be seen in its aversion to crossing streams, and always selecting the driest points for feeding and rest."

These mountains have a cold damp climate, the summits of the highest being covered with clouds and mists a large portion of the summer season. Cold rains are of frequent occurrence, doubtless causing the deep vegetable mould alluded to by Mr. C. There the geologist will see rocks crumbling to pieces, and large fragments tumbling down under the influence of cold and water, of which the *Grandfather* is a remarkable example. This is a high mountain lying within Ash and Burke counties. According to Prof. Mitchell, it is 5,556 feet above the level of the sea, and according to the same author, the Roan is 6,033 feet high; the highest point of the Black mountain, 6,476 feet, being more than 200 feet higher than Mt. Washington, which was formerly supposed to be the highest mountain in the United States east of the Mississippi.—[See Silliman's Journal, vol. xxxv., p. 377.]

A large portion of the county of Yancy is an elevated table land, which is so damp and cold that the inhabitants frequently do not raise corn sufficient for their own consumption. This I learned from Mr. McCall, an old gentleman who resides and has spent most of his life in the North Cove, on one of the branches of the Catawba river. While I was at his house, several men came there on horseback from the high table land above, after corn to make bread for their families. This was in July of 1842. From McCall's I rode on horseback up the "winding stairs," and across a table land thinly settled, (28 miles,) to Mr. Husted's, at the foot of the Yellow Mountain, which is a spur of the Roan. Mr. Husted informed me that he did not attempt to raise corn on account of the cold—that in many seasons there was scarcely a month in the year without frost. With Mr. Husted I walked over the Yellow to the top of the Roan, which was enveloped in a fog, to our great disappointment, for it is said that five states can be seen from its summit. We descended on the other side to Evan Hughes', and spent the night. The next day Mr. Hughes ascended the Roan with us, and again the damp clouds rolled over the mountain, driven by a cold wind. Mr. Hughes, who had charge of some cattle that fed on that mountain, told us that he had been on its top the 25th of June, when a snow storm arose and completely covered the mountain with snow, and that there were few days in the year but that it was foggy on the Roan. After Mr. Hughes left us we got lost in the mist, and with great difficulty regained the house at the foot of the Yellow, after dark. Those who wish to enjoy a mountain view in North Carolina, should always go prepared to encamp on its top, and in the morning, before the rays of the sun cause the mists to arise, they will generally have a glorious prospect, realizing more than their anticipations. I have ascended most of the high mountains in that state, and rarely without encountering a storm, or finding their tops covered with mists, which disappeared in the cool of the evening, to be resumed by the warming rays of the morrow's sun. In encamping on the mountains, I generally found the thermometer to range from 45 to 60 degrees, and on the high mountains, during the day it seldom rose above 65. The inhabitants of the valleys pay great attention to the raising of cattle and horses, which, in the summer season, are turned upon the mountains in what is termed "the range," which consists of tall weeds, native grasses, and in many places white clover has become naturalized. The owners of the stock cut out small troughs in logs which are there termed "lick logs," in which they salt the cattle every one or two weeks, at which times they generally take their guns, and encamp, and hunt a day or more for deer and bear, both of which are abundant. Many of the high mountains are covered more or less with balsam trees, (*Abies fraseri* and *Abies nigra*.) which delight in cold damp situations. The Black Mountain is nearly covered with these trees, from which it has its name. Beneath these trees there is often spread a thick carpet of moss and sphagnum, or peat moss, with a vegetation similar to that of the White mountains and Canada. At Billy White's, near the Grandfather, I found Mrs. White keeping house with her oldest son and some children, while Billy had gone

to some more favored region to raise corn for the family, which cannot be raised near the mountain on account of wet and cold.

These remarks will apply more or less to the mountainous region of Haywood and Macon counties, from which we conclude that they are not suitable to the raising of fine-wooled sheep, judging from their elevation, damp and cold climate, which, as before remarked by Mr. C., creates a deep vegetable mould, in which a horse will sink up to the fetlock. And would not sheep sink in also, and be liable to have the foot rot? And in yearning time would not many lambs be lost from the frequent cold rains so common there during the month of May. Should any think of grazing sheep in that region, let them at least, before doing so, examine and go over the mountains, and should they conclude to embark in the business and finally succeed, I for one would be glad, because I love those mountains. While among the Cumberland mountains, in Tennessee, I heard frequently of large mountain tracts there having been sold at the North, and when the purchasers came on to examine their property, they found it comparatively worthless. This is merely alluded to as a warning to others who might be disposed to purchase mountain tracts in North Carolina before seeing them.

Yours truly,

S. B. BUCKLEY.

West Dresden, Yates Co., N. Y, June, 1846.

#### HOVEY'S STRAWBERRY.

.....

In a late number of Hovey's Magazine, I am charged with having committed "three errors in one short paragraph" of the Fruit Culturist, and the Editor regrets that I should have "detracted from the excellence" of this work, "by making any statements upon subjects of which [I] had no experience." I therefore make a few explanatory remarks in the Cultivator, as it appears evident from the editor's style that he did not expect nor intend any reply to be made in that journal.

The first objection is, that I stated that "the Duke of Kent and Early Scarlet are among the best VERY EARLY" strawberries. He says the former is "quite worthless," and was discarded from his collection twelve or fifteen years ago; and that in the London Horticultural Society's Catalogue it is set down "third size and second quality." It is strange that the editor is not aware that climate often produces a great difference on fruit. Now several of the best judges in Western New-York, consider the Duke of Kent as one of the finest flavored of all strawberries, though it may be otherwise at London and Boston. The Pomological Manual says it is "moderate or medium size," and Downing that it is *valuable* where the earliest fruit is desired. Quality is too often considered to depend on size, by the cultivators of large, insipid, and worthless varieties.

The second exception is, I said that Bishop's Orange was of "good quality and of large size," which the editor positively contradicts. If he will turn to Downing's "Fruits and Fruit Trees," he will find that I am fully justified by the terms "*large size*," "*very high flavored*," and "*finest quality*," there applied to Bishop's Orange.

"But the third and gross error," continues the editor, "is that Hovey's Seedling is tender! It is evident from this that Mr. Thomas never cultivated the true variety, or he would not have made such a statement, for one of its greatest qualities is its hardiness." As for the true variety,—our plants were obtained from A. J. Downing & Co., of Newburgh, and from Prof. Jackson, of Schenectady;—men of the highest standing as horticulturists. As for its being tender, I know several instances in Western New-York, where many plants of Hovey's Seedling were nearly all destroyed by the frost in winter, while the Early Scarlet and other varieties, planted at the same time alongside, nearly or quite all escaped. Such loss was subsequently prevented by winter protection—proving decisively that Hovey's Seedling is not so hardy as the Early Scarlet or Virginia in some localities in this part of the state.



I have no wish to lessen the popularity or sale of this fine variety. The Fruit Committee of the Mass. Hort. Society tried it twelve years in that climate and neighborhood, before they certified that it is "one" of the best; but as it had not been tried so long in other climates, I expressed a caution that it should not be EXCLUSIVELY or *very extensively* cultivated till such proof should be had,—though I admitted that "it is regarded by many who had cultivated it, as the finest of all varieties." Now ought this to give offence to a reasonable man?

J. J. THOMAS.

#### NEW-YORK STATE AGRICULTURAL SOCIETY.

SHOW AND FAIR TO BE HELD AT AUBURN, SEPT. 15, 16, AND 17, 1846.

The sixth annual Fair and Show of the State Agricultural Society is approaching, and the interest which is manifested shows that our society has lost none of the confidence of the agriculturists of the state. The previous exhibitions have been attended by immense gatherings from different parts of our own state, as well as large numbers from other states in the Union.

The location of the Fair at Auburn, being near the centre of the state, will undoubtedly secure a larger attendance than at any previous Fair of the Society.

The arrangements, it is believed, will be such as to meet the expectations of the public, and the citizens of Auburn are making preparations that will insure suitable accommodations for all who may be in attendance.

The list of premiums of the Society embraces a very great variety of articles—and are so extended as to secure a very spirited competition.

In the appointment of the judges, the officers have selected such names as will secure the confidence of the public, in the awards that may be made.

We would urge upon the friends of agriculture throughout the state to make vigorous efforts to bring out our citizens at the approaching Fair. Every year we have added to the list of our friends, from those who have attended our exhibitions, and we desire still to add to their numbers until every farmer in the state as well as every other citizen, shall take a deep interest in our society, which is identified with the permanent prosperity of the state.

Arrangements will be made for the ladies, that will secure a tasteful display of the articles they may exhibit—and it is hoped that in this department we shall witness a display excelling that at any former meeting of the Society.

#### REGULATIONS FOR THE FAIR.

All members of the society, and all who may become members at the time of the Fair, by the payment of \$1.00, will be furnished with badges which will admit the person and his wife and children under 21 years of age, to the exhibition at all times during the Fair. Tickets to admit a single person, 12½ cents.

Members will be allowed to enter in carriages with their families, but no hacks or other public conveyances will be permitted to enter except when the inmates are members of the society, without paying a dollar for each entrance, and the inmates, if not members, to furnish themselves with tickets.

At a meeting of the Executive Committee of the N. Y. State Agricultural Society, held at the American Hotel in Auburn, on Thursday, the 14th of May, 1846, the following members were present, viz: J. M. Sherwood, President; E. P. Prentice, H. S. Randall, J. R. Speed, L. F. Allen, Vice-Presidents; J. B. Nott, Corresponding Secretary; Hon. A. Conkling, Dr. John Miller, and Ambrose Stevens; assisted by the Presidents of the Onondaga and Cayuga Co. Agricultural Societies, and other eminent agriculturists, the following committees were appointed, viz:

*Committee of Arrangements, and for selecting the Show Ground, and preparing it for the coming Exhibition.*—J. M. Sherwood, J. H. Chedell, C. C. Dennis,

Auburn; Wm. Fuller, Skaneateles; H. S. Randall, Cortland Village; J. B. Nott, Albany; S. M. Brown, Elbridge; A. Thompson, Aurora.

*Committee for Reception of Strangers.*—E. T. Throop, Willow Brook; A. Conkling, Melrose; W. H. Seward, Chris. Morgan, E. A. Worden, T. Y. How, Jr., S. A. Goodwin, Auburn.

*1ST CLASS—Durham Cattle.*—Gov. Allen Trimble, Ohio; Henry Parsons, Ancaster, C. W.; L. Chandler Ball, Hosack.

*2D, 3D, AND 4TH CLASSES—Hereford, Devon, and Ayrshire Cattle.*—Elias Phinney, Lexington, Mass.; Lemuel Hulburt, Winchester, Conn.; Edward Cox, Black-Rock.

*5TH CLASS—Crosses of Native and Improved Cattle.*—Ira Hitchcock, Vernon; Lewis G. Morris, Morrisiana; John Randall, Norwich.

*6TH CLASS—Native Cattle.*—W. Garbutt, Wheatland; Thomas Hilhouse, Albany; Samuel Stevens, Preble, Cortland county.

*Working Oxen.*—Sanford Howard, Albany; Wm. Fuller, Skaneateles; John Ayrault, Perrinton.

*Steers.*—Gideon Ramsdell, Perrinton; Francis Hibbard, Cortland Village; Hiram Clift, Marcellus.

*Fat Cattle.*—John Holcomb, Wilmington, Del.; Thomas Kirkpatrick, Albany; A. L. Freeman, Jordan.

*Fat Sheep.*—E. W. Cady, Dryden, Tompkins Co.; Wm. Osborn, Auburn; — Hayden, Syracuse.

*Stallions of all work and draught, and Mares.*—Adam Ferguson, Watertown, C. W.; Elbert Jones, Oyster Bay; Henry K. Morrell, Caroline Co.

*Blood Stallions and Mares.*—James Bathgate Fordham; D. D. Campbell, Schenectady; Gen. Daniel Jones, Cold Spring, Queens Co.

*Best Matched and Single Horses.*—Edward Long, Cambridge; Wm. A. Dutcher, Penn Yan; W. S. Davis, King's Ferry.

*Long Woolled Sheep.*—Philip Reybold, Wilmington, Delaware; Samuel Cheever, Stillwater; Augustus Rayner, Clarence, Erie Co.

*Middle Wool.*—William Howitt, Guelph, C. W.; Paoli Lathrop, South Hadley Falls; Benj. Enos, De Ruyter.

*Merino Sheep and their Grades.*—Robert R. Reed, Washington, Pa.; Edward A. Le Roy, New-York; N. B. Smith, Woodbury, Ct.; Samuel Lawrence, Lowell, Mass.; S. Newton Dexter, Oriskany.

*Saxon Sheep.*—Adam Hildebrand Massilon, Ohio; Daniel Rogers, Hosack Corners; Wm. McKee, Salem, Washington Co.; John A. Tainter, Hartford, Ct.; Homer Blanchard, Kinderhook.

*Swine.*—G. V. Sackett, Seneca Falls; P. N. Rust, Syracuse; E. L. B. Curtiss, Danby, Tompkins Co.

*Poultry.*—L. B. Langworthy, Rochester; Thomas Hollis, Gilbertsville; Edward Mesier, Fishkill.

*Plows.*—C. C. Dennis, Auburn; Enoch Marks, Fairmount; S. N. Wright, Vernon.

*Harrows, Wagons, &c.*—Samuel Greenleaf, Canandaigua; E. P. Beck, Sheldon, Wyoming Co.; Israel Boies, Homer.

*Corn and Cob Crusher.*—Geo. Geddes, Fairmount; Kingsley Sanford, Volney, Oswego Co.; Teunis Bergen, Brooklyn.

*Plowing Match.*—John Johnston, Geneva; John Finch, Astoria; David Matthews, Truxton; Henry Brewer, Enfield; Paris Barber, Homer.

*Butter.*—Z. Barton Stout, Allen's Hill; Andrew Dickson, Cortlandville; Aaron Petrie, Little Falls.

*Cheese.*—Hon. Wm. C. Crain, Warren, Herkimer county; Lewis Eaton, Black Rock; Elijah Morse, Eaton.

*Maple and Corn Stalk Sugar.*—Otto F. Marshall, Wheeler, Steuben Co.; Robert Hadfield Sheldon, Wyoming Co.; Wm. Blossom, Canandaigua.

*Silk.*—Joel F. Belcher, Richford, Tioga Co.; Charles Pardoe, Skaneateles; Edward Morgan, Aurora.

*Domestic Manufactures.*—Roswell Randall, Cortlandville; Curtis Moses, Marcellus; Moses D. Burnett, Syracuse.

*Fruit.*—John A. King, Jamaica, L. I.; W. L. De Witt, Ithaca; A. H. Underhill, New-York.

*Flowers.*—Herman Wendell, Albany; Wm. N. Randall, Cortlandville; — Tracy, Syracuse.

*Miscellaneous Articles not enumerated or specified.*—R. L. Allen, Buffalo; J. T. Cooper, Albany; Wm. Jackson, Syracuse.

*Vegetables.*—L. A. Morrell, Lake Ridge; Geo. J. Pumpelly, Owego; Henry Morgan, Aurora.

*Stoves and other Manufactures of Iron.*—C. N. Beament, Albany; Samuel T. Pratt, Buffalo; Franklin Manning, Syracuse.

*Paintings and other Drawings.*—Francis Rotch, Butternuts; — Walker, Utica; Gen. John A. Granger, Canandaigua.

*Ornamental, Shell, Needle, and Wax Work.*—Mrs. B. D. Coe, Buffalo; Mrs. Hanson Cox, Auburn; Mrs. Alvah Worden, Canandaigua; Mrs. Wetmore, Utica; Mrs. W. W. Watson, Geneva.

*Unenumerated Implements, and other articles.*—J. J. Viele, Troy; J. B. Duane, Schenectady; Stephen B. Cushing, Ithaca.

*Committee to negotiate with R. R. Companies for the transportation of Stock, Implements, Passengers, &c., to and from the Show.*—E. P. Prentice, Albany; Geo. Vail, Troy; T. S. Faxton, Utica; M. D. Burnett, Syracuse; C. P. Wood, Auburn; L. B. Langworthy, Rochester; L. F. Allen, Buffalo.

*For the Reception of Stock, &c., &c.*—Ira Hopkins, Esq., Maj. J. B. Dill, Wm. Howard, Esq.

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[We learn by the *Tocsin*, that a meeting was held at Auburn, on the 27th of June, for the purpose of devising a plan for conducting the coming Fair. For this purpose a committee was chosen to confer with the Executive Committee of the Society. Committees were also chosen for the purposes of collecting subscriptions and paying bills, erecting buildings for the Fair, providing water and forage for the use of visitors and stock during the days of the exhibition, selecting suitable grounds for the plowing match, to provide lodgings and accommodations for strangers during the Fair, to assist in the decorations of Floral Hall, and other buildings, &c., &c. A determined resolution seems to be manifested by the citizens of Auburn and vicinity, to do their utmost to render the exhibition creditable in all respects to the state, to the Society, and to themselves.

#### HORSES vs. OXEN IN AGRICULTURE.

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MR. TUCKER—In reading Skinner's Essay on the Ox, in Clater's and Youatt's Cattle Doctor, (which by the way, I would recommend to every farmer as almost indispensable,) I supposed that he gave the ox too much preference over the horse, in regard to economy and usefulness as a beast of burden; and to satisfy myself of the fact, I commenced, one year ago last April, to keep an exact account of the work done, and the amount of food given to one pair of horses, and one yoke of oxen, on a farm of about one hundred acres of tillable land, setting down every Saturday night, the number of miles travelled, the number of days worked, and the amount and kind of food consumed during the week. The following is the result:

The horses travelled 667 miles double; 2,151 miles single; worked on the farm 59½ days double, 36½ days single. Now allowing 40 miles travel to be a day's work for a team, it would make 121 days the whole amount performed by one pair of horses in one year, which, at \$1.75 a day, would amount to \$211. They were fed during that time, 105 bushels of oats, which at 50 cents per bushel, amounts to \$42; 47 bushels of corn, at 70 cents, \$33; 5 months pasture, at \$3 per month, \$15; 2 months hay, at \$4 a month, \$8; 3 months on cut straw, worth about \$5; expenses of shoeing, \$8; wear of wagon and harnesses, \$10; decrease in value of horses, \$20; making in all, \$141; which deducted from \$211, leaves a nett profit of \$70.

The oxen, in that time, did 100½ days' work, which, at \$1.25 a day, amounts to \$125.62; were fed 12 bushels of corn, which, at 70 cents, is \$8.40; 6 months' pasture, at \$2.50 a month, \$15.00; 3 months' hay, at \$3.50 a month, \$10.50; 3 months straw, at \$2.50 a month, \$7.50; wear of cart, \$3.00; making in all \$44.40; leaves a nett profit of \$81.22; making a balance of \$11.12 in favor of the oxen.

But Mr. Skinner says a yoke of oxen will do as much work in a day as a pair of horses; if he is correct, then the balance in favor of oxen would be \$61. But such cattle, I think, are very scarce—at least I have found them so.

I last year commenced raising carrots for stock, and although some of my neighbors laughed at me for farming after the Cultivator, as they called it, and I cannot boast of the crops of Mr. Risley, of Chatauque, yet I got at the rate of 600 bushels to the acre, and am satisfied it is more profitable than raising potatoes, could we get a good crop of the latter, which is very uncertain; and this year I have sowed twice as much as I did last year, and am confident I shall get one-third heavier crop, as I did not sow them last year until the last of May, which I think was too late; it was also a very dry season. I raised last year on one-fourth of an acre, 150 bushels, which at 15 cents a bushel, amounts to 22.50. Whole time spent in plowing, sowing, seeding, and digging, 18½ days, every hour told, which, at 75 cents a day, is \$13.87. Cost of seed, \$1.50, making in all, \$15.37, and leaving a nett profit of \$7.12, or at the rate of \$28.50 per acre.

HERBERT VAN VOLKENBURGH.

Malden Bridge, Columbia Co., June 24, 1846.

#### WINTER AND SUMMER WHEAT—A NEW VARIETY.

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MR. TUCKER—Addison county in former years was quite noted for its productions of winter wheat, as many of the oldest "Trojans" can testify, who received our grain in exchange for cash and goods. For many years we have cultivated but little of any variety. The wheat fly annoyed us so much we were obliged to abandon it, and look to the west for our bread.

Our success has been quite flattering for two or three years. I have heard it reported by those well informed, that we now have more wheat on the ground than was ever sown any one previous year. It never looked more promising for a bountiful crop than at present. Thousands of bushels of our surplus must seek a market abroad.

The Black-Sea Wheat,—a summer variety—is now cultivated here, on account of the general success which we have had in growing it on all kinds of soil, and through a variety of seasons. It produces abundantly, and is insured against the rust. The fly troubles it less.

In February, 1845, I put one peck of this wheat to soak, and as soon as it began to germinate, mixed it with a loam soil, put it into a keg, and exposed it to the weather, where it soon froze, and remained in that state till the last day of March; then sown on muck land, which had thawed to the depth of two inches. The same night the ground froze hard, and it thawed and froze once more before the spring opened. Three-fourths of the grain died, in consequence, as I think, of the grain being too much grown at the time of sowing. It grew wonderfully, kept eight inches ahead of the spring crop sowed in May, and stood six inches higher through the season than the Black-Sea beside it. The heads were uncommonly long, of a deep red and darker color than the summer wheat. The heads were also longer in the head and more stiff. I harvested four bushels; the berry was evidently larger than the original grain, though not as plump.

In November last, the 13th day, we sowed a pail full of this wheat on loam land, which came up well. It stood about two inches high when the ground froze, and remained covered with snow during the winter. It came forward finely this season, is now headed out, and has every appearance of a large yield. I think it safe to call it the "Black-Sea winter wheat." If it retains



the distinguishing properties of the summer variety, it must be a valuable acquisition to our country.

For two years I have cultivated the "Improved White-Flint," or "Harmon wheat," which I obtained from Gen. Harmon, of Wheatland, N. Y. The berry is very even in size, the best and handsomest wheat I ever saw. On less than four acres of sandy loam we sowed about 5½ bushels, September 8th, 1844. The land is not what we call "wheat land," in this section; not very strong soil, yet I was happily disappointed in harvesting 113 bushels from the piece of the best wheat that I have seen raised here for the last 15 years. The millers pronounce it such.

The heads are a little bearded, white, rather short, but extremely well filled. The straw is very stiff, of good proportion, bearing but few leaves; it is quite small near the head, hard, and not inclined to lodge; the berry is of good size, very white and solid, which produces but little bran. One very great advantage in this variety, as well as in the Black Sea, is, it does not shell in gathering, though quite ripe. I have now the second and more promising crop growing on stronger land. This wheat is so well known that it needs no praise. Mr. Harmon informed me, last winter, that he sold over 1200 bushels for seed last fall, of this kind of wheat. Sales more extensively in his own region, but had received many orders from the south, middle, and western states, as well as New-England and the Canadas.

S. W. JEWETT.

Weybridge, Vt., June 12, 1846.

#### PRINCIPLES OF BREEDING.

.....

"THE offspring of some animals is very unlike themselves; it is, therefore, a good precaution to try the young males with a few females, the qualities of whose produce has been already ascertained; by this means we shall know the sort of stock they get, and the description of females to which they are best adapted."—[Sebright's *Essay on the Art of Improving the Breeds of Domestic Animals*.]"

.....

In various races, animals are now and then produced which are the means of effecting extraordinary improvements. Some individuals possess a remarkable and inexplicable power of transmitting their good qualities, or of begetting stock superior to themselves.

It is true that what are called well-bred animals usually transmit their qualities with greater certainty than others; and in selecting breeding stock which has not been proved, due regard should of course be had to blood and pedigree. But the faculty alluded to is not always possessed in proportion to the degree in which any particular blood is inherited, for animals of exactly the same blood frequently beget progeny of very different qualities. In swine, for instance, it is not uncommon for the offspring of boars which were of the same litter, to vary much in shape and disposition to fatten. It is so with sheep; of rams that are twins, or those which are the produce of the same buck and ewe, one frequently proves far superior as a stock-getter to the others. The progeny of stallions of the same blood are sometimes quite various. It is not very rare that one male among several produced by the same parents, becomes noted for the value of his stock, though the remainder of the family acquire no particular reputation in this respect. Perhaps no very satisfactory reason can be given, why the progeny and descendants of the horse Messenger have proved so much more valuable for business purposes than most other blood horses in this country. Neither can the superior qualities which have distinguished the descendants of the "old Justin Morgan horse," (the ancestor of the "Morgan" stock,) be fully accounted for by any rules with which we are acquainted.

These remarks are also equally applicable to cattle. In the variety so widely known as improved Short

Horns, great improvement has been attributed to the bull Hubback, whose qualities, as well as those of his progeny, are generally acknowledged to have been much superior to what the Short-Horns generally were before their time. And we may properly mention in this connection, two bulls, descendants of Hubback, viz., Favorite and Comet—the former the sire of the latter. Although they were nearly similar in blood, Favorite was much the most celebrated as a valuable stock-getter, notwithstanding Comet brought at public auction the enormous sum of one thousand guineas. A noted English breeder, in speaking of these bulls, says—"Comet was never the father of as good an one as himself; it was otherwise with his sire. Favorite stamped all his offspring as superior to himself; perhaps no bull ever begat so many good bulls and cows."

Of several examples of this kind which have occurred within our own observation, we cannot omit the mention of one in particular which appeared to us quite striking.

A few months ago, while examining the stock of Mr. HORATIO SARGEANT, of Springfield, Mass., our attention was specially attracted by several animals in the herd, which, besides their fine forms and silky coats, were remarkable for their great resemblance to each other—exhibiting an uniformity in shape and general qualities seldom witnessed. On inquiry, we were informed by Mr. SARGEANT that these animals sprung from a bull called Red Comet, which he had formerly owned. He observed that he was the most remarkable animal as a stock-getter he had ever known—that all his progeny were most strikingly marked with his own good points, and that they proved excellent for all purposes. These remarks stimulated us to learn the full history of the animal. Mr. S. informed us that the bull was bred by HENRY WATSON, Esq., of East Windsor, Ct., but could not state particulars in regard to his blood. Mr. S. purchased him in Granville, Mass., where he had been kept several years. As the stock which he had begotten while at that place, grew up and were proved, their superiority for the dairy and other purposes became so obvious, that one of his former owners was induced to re-purchase him, and he was therefore, though then at an advanced age, taken back to Granville, where the farmers gladly availed themselves of his services for several years.

Shortly after our interview with Mr. SARGEANT we wrote to H. WATSON, Esq., for additional facts in regard to the animal which had been the cause of so much improvement, and from his reply we make the following extracts.

"You ask a history, &c., of the bull bred by me, that for a time was in the hands of Mr. HORATIO SARGEANT. The pedigree of that animal is as follows. Red Comet, (1591,) dark red, calved 26th June, 1827; got by Wye Comet, dam Flora, bred by me, by imported bull Holderness, alias Fortunatus; g. d., Belle bred by me, by Young Denton, (963;), gr. g. d., Crowfoot, a native red cow.

"I sold this bull to WARD WOODBRIDGE, Esq., and he let him one year to Gen. PARSONS, of Granville, Mass., and the next year sold him to Gen. PARSONS, who kept him for three or four years, and sold him to HORATIO SARGEANT, of Springfield, Mass. Mr. SARGEANT kept him three or four years, when GEN. PARSONS bought him back, and kept him one or two years. He then sold him, and he went to Woodstock, in this state, where, I believe, he died. After being used two years while at Woodstock, his owner came to see me and ascertain his pedigree. The bull was then twelve years old, and had been put that year to over 100 cows, at \$3 each. - The stock of his getting, while at Granville, all turned out fine cows for milk and excellent steers for the yoke and shambles, and that was what induced Gen. PARSONS to get him back. While at Springfield he got more good milkers and fine steers than any bull that ever stood in that vicinity. I have seen a great many animals of his get, and they were uniformly superior. He was unquestionably used to more native and cross-bred cows than any bull ever kept in New-England. His descendants from such

cows were better than those of his sire, Wye Comet. Abel Chapin, Esq., bred and fed three or four very large and fine steers of his get. One in particular, though not as large as two others he had, was sold to Mr. SAR GEANT, and slaughtered in Springfield before he was six years old.

His live weight was, ..... 2,627 lbs.

Dead weight, quarters, hide and tallow, . 2,023 "

Loss, ..... 604 "

Or about 23 per cent. I did consider this steer the best animal of the kind I ever saw, and the nearest in every point to perfection."

From the pedigree of Red Comet, as given by Mr. WATSON, it appears that he was one-half of the blood of Wye Comet, one-fourth of the blood of Fortunatus or Holderness, one-eighth of the blood of Denton, (Young Denton of the Herd-Book,) and one-eighth common or "native" blood. From what we have seen of the stock of this bull, and from all the information received, we have reason to believe that he was an animal of uncommon usefulness, and that the above account does him and his stock no more than simple justice.

Our readers will now, perhaps, be able to understand why we have placed the extract from SEBRIGHT as a *text* at the head of this article. The design is to enforce the idea therein contained, that male animals of good promise should be fairly tried and the character of their produce ascertained, before they are either extensively used or rejected. Could this be done, it would prevent great losses from the use of poor stock-getters, and might in many cases be the means of saving and making generally useful, animals whose good qualities might not otherwise be known.

#### SOWING WHEAT.

MR. TUCKER—Few persons are aware how very much the yield of the wheat crop depends upon the manner upon which the seed is deposited in the soil. I risk nothing in saying that fully one-third could be added with certainty to every farmer's crop by due attention to this point. The proper depth at which seeds should be deposited in the soil, has engaged the attention of the most eminent agriculturists and scientific men of Europe, and its vast importance acknowledged by them.

Baron Voght, of Flotbeck, near Hamburg, has most ably discussed this subject in the *British Farmer's Magazine*, vol. 4; and Mr. Patrick Sheriff, of Mungo's Wells, near Haddington, in Scotland, has written in the early numbers of the *Quarterly Journal of Agriculture*, some articles so practically convincing and so much to the point, that I think you could not do your readers a greater favor or service than to give them to them entire, if the work I allude so is within your reach. If seeds be placed by accident or design at such a depth in the earth, as to be out of the influence of the air, and though they may be surrounded by the requisite degrees of heat and moisture, they will nevertheless remain dormant.

We have many instances of the truth of this in every day practice, and of the imperishable properties of some kinds of seeds when excluded from the influence of the air. If seeds are dropped on the surface of the ground, they will remain uninjured and unaltered so long as the air is perfectly dry; but in moist air germination commences, and the point of the root will quickly protrude and find its way into the soil. This is the ordinary process of nature; but experience has taught us, that though nature distributes grain and other seeds generally on the surface of the spot where produced, yet there is a proper depth at which all seeds should be deposited, and which is specially suitable. This depth is obviously that which, while it yields the necessary degrees of heat, moisture, and darkness, is yet within the requisite influence of the air. The drilling system is approved, not only from its equal

distribution of the seed, but because by it, seeds are also laid in at an equal depth; this last circumstance is regarded as one of the principal advantages of the machine. Now, Baron Voght has endeavored to show that seeds may be deposited too deep even by the drill, and in all cases when seed is sown before harrowing, much of it will be laid deeper than it should be, and consequently lost. Of this there can be no doubt. Every one acquainted with sowing must allow that seed may be buried too deep; and every body acquainted with the structure of culmiferous plants and their manner of growth, must be convinced that if seeds are just covered so as to be sufficiently shaded from the sun's rays, it is enough. Mr. Sheriff clearly proves, that all seeds with what he calls "coronal roots," no matter at what depth the seed is deposited and germinates, that so soon as it reaches within one-half an inch of the surface of the earth it will then put forth its coronal roots, and from them make a new start. There is no fact connected with agriculture more easy of proof than this; any farmer may take a flower-pot filled with earth, and in it deposit three or four grains of wheat at different depths, from an inch downwards, and satisfy himself of this fact, as well as the weakly and sickly state of all that are sowed below the depth of one inch, as compared with the one sown at that, the proper depth.

Explanatory of these assertions, Baron Voght has appended to his paper figures of five different kinds of grain in five different states of growth, caused by the different depths at which they had been deposited in the earth. I annex two of these, as sufficient to illustrate my subject.

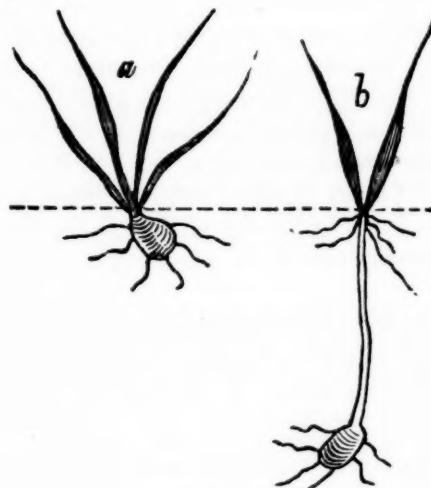


Fig. 67.

The dotted line is the surface of the ground; *a*, represents a healthy plant of wheat from a seed laid in at the proper depth, viz., one inch beneath the surface; *b*, shows the growth of a plant from a seed which has been laid in two days. This last, it will be observed, vegetated, although two or three inches under the surface, threw out its seminal or first roots, and sent up its first shoot bearing two leaves into the air; but as the first branch of the culm rises therewith, and remains near the surface; it also throws out roots, and entirely supersedes those that were first produced from the grain.

To every practical and observant farmer it must be evident that this unnecessary waste of vegetable power must be both hurtful and unnatural; besides, the young plant must be more liable to accidents from the changes of the weather, slugs, and insects, during the ascent of the first shoot, and before the principal root is formed, than if started from its natural position at once.

To guard against over-deep sowing, or burying the seed altogether so as not to germinate at all, it is evident that no seed should be sown until the ground is first harrowed, and made level, and when sown, a light harrow passed over the field, will cover the seed sufficiently to insure a safe and good crop. Of these facts experience had long since convinced me, but if any doubt had remained in my mind about it, the crop of wheat



grown by Mr. Wm. L. Thompson, within a few miles of this city the past season, would have entirely removed them. He had a 20 acre field of corn, which he had cut up and taken away. Finding the ground very mellow, he thought he would try the experiment of sowing his wheat on it, two bushels to the acre, without plowing, and merely harrow it in, which he did. His hands, and all his neighbors tried to dissuade him from it, saying it was a waste of so much seed and labor, but much to their astonishment, in the spring, there was no so luxuriant crop as this in the neighborhood; and I have Mr. Thompson's assurance, that he delivered to the mill, of good merchantable wheat, a little over 25 bushels to the acre, being 5 bushels to the acre more than he had ever grown off his land before. So satisfied is he with the result, that he is determined never to sow his wheat again until he has first harrowed and leveled his land, so as to preclude the possibility of too deeply burying any portion of the seed, which is inevitable if sown on plowed and unharrowed land, or which is still worse, if sown and plowed in as is often the case.

If these remarks will only draw the attention of wheat growers to this subject, I am satisfied that a little reflection and observation will convince them, that by properly preparing their land to receive the seed, and depositing it at a proper depth in the soil, the wheat crop of the United States may be increased fully one-third, without any additional labor or expense.

A FARMER.

Louisville, Kentucky, 1846

#### AGRICULTURE AS AN OCCUPATION.

.....

L. TUCKER, Esq.—I have no apologies to offer for asking a place in your very valuable journal for a few thoughts upon several subjects connected with agriculture. It is enough that you have requested me to do so, and that, after a delay which may have led you to conclude I had no intention of complying with your request, I have found time to commence what I design as a series of communications, which, should they prove interesting to a portion of your numerous readers, I shall be happy to forward, as time and circumstances may allow. I do not intend to write to please my own fancy; nor merely to amuse those who may read, but if possible to benefit. If I can aid the wavering in the choice of an honorable business, or encourage the laborer in his toils, or give any valuable hints to the inexperienced, I shall feel richly remunerated for my efforts. The first subject which I wish to present, is the choice of an employment.

A sentiment has prevailed, and I fear yet prevails to an alarming extent, that the practical farmer occupies a place in society a grade lower than the professional man, the merchant, or than many other laborers. Many of our youth have imbibed this sentiment, and have been encouraged in it by the fond but injudicious parent. Thus, not a few who might otherwise have been useful members of society, have been thrown upon the world, mere pests to the community. I have certainly no antipathies to the learned professions, the mercantile business, or mechanical employments. These are all necessary and important; but I insist that agriculture is neither less important, or less honorable, or less useful.

The difficulty is not so much in the several kinds of business, as in the fact, that an *undue proportion* of our fellow citizens are engaged in the former, to the neglect of the latter; and more than all, that the sentiment which I have suggested, prevents multitudes from engaging in either.

From my own observation, in a life of more than 45 years, and looking back and following the history of my early associates, and from a somewhat extensive acquaintance with the world, I am fully of the opinion that *that* sentiment is one of the most fruitful sources of idleness and crime, of any that can be named. And yet, what multitudes of young men and guardians act, or seem to act, under its influence.

I knew a man in my early boyhood, who has a pro-

fession, but very little else, (except a numerous family) who was often heard to say, that his sons should never be farmers, let what would come. Those sons are now vagabonds, except one, who has already come to an untimely end. His daughters married *gentlemen*, and are both living in abject poverty. This is only one among the multitude of cases which might be mentioned. Still men will pursue the same path.

I know a farmer with two sons—smart, active lads, enjoying good health, who, not long since, *rented* his farm; that he and his boys might live easier. I was inclined to say to that father, take care, sir, that you train not those fine young fellows to idleness, dissipation, and vice.

God made man an agriculturist, and while in a state of innocence, his first business was to till the ground. And in every age of the world, some of the greatest and the best of men have been farmers. Job and Abraham were farmers; Washington and Jackson were farmers—as also a multitude of worthy names and noble spirits, who, like them, have blessed the world with examples of greatness and honorable deeds. And I rejoice to know that many in our own time, of highly cultivated intellect, and enlarged views, and worldly competence, are proud to be ranked among practical farmers.

Far better had it been for the world had the number been tenfold greater. Far better were it for the present generation, if in the choice of an employment, parents and their sons would view the subject as these have done; and let those sons be directed in their choice to the same wise results. Thus, much of the idleness and crime which are exerting such a fearful influence upon us, would never have existed. Many of the *temptations* to vice would have been avoided.

I know a father, engaged in a profession, who has an only son, for whose interest he has ever felt the deepest solicitude. When that son was 16, like many lads of his age, he manifested a strong desire to engage as a clerk in a store. The father felt that agriculture was an *equally* honorable business—much safer, and more free from temptation; yet he did not wish absolutely to *compel* to a course averse to his own choice. He therefore engaged a place for him with a merchant of his acquaintance to be occupied in a few months, on condition that the son should still persist in his determination. He then took the son alone, and informed him that he had procured such place; at the same time pointing out in a kind manner, the advantages and disadvantages of the mercantile business, and of agriculture. He told him that he was now of an age that he must choose for himself. That whichever way he should now decide, he would be aided as much as practicable—that *that* decision must be final—that he might reflect upon the subject one week, and then let his decision be known.

At the close of the week, he decided “to be a farmer,” to the joy of his father. From that day onward, he has pursued steadily his course—is now pleasantly situated upon a comfortable farm, and is proud, at home and abroad, to be known as a farmer.

Would it not be wise for many a father and son, to imitate this example?

R. A. A.

Galway, Saratoga Co., 1846.

#### FOOT ROT IN SHEEP.

.....

SOME interesting facts relative to this formidable and contagious disease have been communicated to us by HUMPHREY HOWLAND, Esq., of Cayuga county, whose long and extensive experience in the management of sheep entitles his opinions to great weight. He has applied a remedy which, if not totally eradicating the disease, certainly promises to reduce it exceedingly. This remedy is now in use for the second season, during which time, the rot has diminished from thirty per cent. to one per cent., in a very extensive flock, or only one sheep is now lame where thirty were formerly. Other flocks in the neighborhood, to which the remedy has not been applied, are as badly affected as ever.

The remedy consists in mixing flour sulphur with the salt given to the sheep, in a proportion just suffi-

cient to discolor slightly the salt, or about one-twentieth part. They are regularly and constantly fed with this mixture the season through.

The disease being considered as allied to the itch, the sulphur mixed with oil was also applied to the backs of the sheep immediately after shearing, and whatever effect this mixture may have had upon the rot, the grease was found to have increased the weight of wool about a quarter to half a pound per head. The practice of applying oily substances externally to sheep, and the beneficial results, have been elsewhere known, and this experiment further establishes the advantage.

The cost of these materials for large flocks, may be lessened by purchasing in quantity in New-York city. Flour sulphur is often retailed at twelve and a half cents per pound; in New-York it costs three dollars per hundred, and fifty cents additional, as freight, brings it to only three and a half cents per pound. Lard and lamp oil are costly as external applications; but train oil, or oil of the true whale, is only about 32 cents per gallon in New-York, if bought by the barrel, or \$10 per barrel; this would be enough for 2000 head of sheep, or half a cent per head;—the sulphur mixed, and the labor of application would be about 2 cents per head.

It is of great importance not to draw hasty conclusions; but the above remedy, it is believed, if not totally removing the rot, which longer trial may accomplish, will certainly be of the highest benefit in lessening its formidable nature.

#### THE STRAWBERRY.

.....

MR. TUCKER—I am pleased with your strong common sense notice of my letter on the character of the strawberry plant, though like many others, your mind is still unsettled on the subject. My mind is relieved from all anxiety on the subject, for when the attention of such men as Professor Kirtland, Buist, Wilder, and Jackson, have been drawn to it, and their doubts removed, even the most skeptical of our scientific European gardeners and botanists must deem the subject worthy their notice. For 26 years I have endeavored to draw the attention of the latter to it in vain. I was listened to with patience till candor compelled me to admit that my attention was first drawn to the subject by the opinion of an ignorant market woman. From that moment I was compelled to be silent. But the day is as near at hand as the millerite day of judgment, when these learned and scientific men will be compelled to admit that the old woman was a better botanist than Linnæus, so far as the character of the strawberry plant is concerned. With our ignorant market gardeners, I had no difficulty in making converts. They knew Mrs. Abigust could raise larger and finer fruit than they did on the same space of ground, and five times the quantity. To be certain of having the same kinds, they even stole her plants. But in a single year, they became barren also. I pointed out to them the difference between the staminate and pistillate blossoms, and they saw that the former did not bear a single fruit, (for the staminate we cultivated at that period were entirely barren,) whilst the former produced a perfect berry to each blossom. They required no other evidence, not being botanists, and soon compelled Mrs. A. to quit the business.

The subject has been for two years before a committee of botanists and market-gardeners, appointed by our Horticultural Society, and their report will soon be made. It is also before the Horticultural Society of Boston, and we shall soon know their opinion on the subject; and their attention will be especially directed to the justly celebrated seedling of Mr. Hovey, and its character will be settled.

I cannot be surprised at the doubts of others, when Mr. Hovey is entirely ignorant of the character of his own seedling, after cultivating it extensively for 12 years, and his attention having been drawn to the subject some years since. You say truly, my reply to Mr. Downing "does not demolish, but overleaps his assertion." With my friend Downing, I have less patience

than with others; for from his just celebrity as a horticulturist, I expect him not to be *nearly, but exactly right*. When he has for a single season, devoted as much attention to this plant as I have done each year for 20 years, he will freely sustain my views. Ten acres of Hovey's seedling, if entirely separated from all others, will not in ten years produce a full-sized, perfect fruit. For fifteen years we cultivated the Hudson only, and for that period I kept a bed of them separated from all others, to make new plantations from, and during that period they did not produce a single fruit.

"Facts are chieft that winna ding,  
And downa be disputed."

And even our European gardeners admit that the principles I contend for are true in this climate, but still contend that in Europe, all species and varieties are perfect in both organs, and uniform bearers, and no difference in the size and appearance of the blossom, which they now admit to exist with us. But they contend that our plants, if returned to Europe, would recover from their defective organization, and become perfect in both organs. I marvel if the change would take place as *suddenly as it does with us*. Fifteen years since, I imported eight or ten varieties of strawberry plants from England, and they blossomed within *two weeks* after their arrival, and wonderful to tell, all but one variety were defective in the female organs, and after 2 or 3 years' trial, were deemed of no value except to impregnate the pistillate variety, which I still have, and which I feel bound in truth to say, has retained her purity and chastity of character, and would never bear fruit if left unmolested.

In two things we can beat the mighty East. In the abundance of our strawberries, and in the cultivation of the Cactus. The Night-blooming Cereus is with me now in its glory. I have had more or less blossoms on several plants in tubs and pots, for the last two weeks. On one plant I had 69 buds and blossoms, and 38 of them in full bloom on Saturday evening last, besides numerous blossoms on other plants.

Cincinnati, June 17, 1846.

N. LONGWORTH.

#### THE QUEEN BEE.

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MR. EDITOR—Dr. Bevan, and other celebrated writers on the nature and habits of bees, say, that second and third swarms have very often two or more queens when they leave the old hive, and before they commence operations in their new habitation, there will invariably be a battle, which lasts till all but one are killed; but that an instance never yet occurred where all were destroyed, even if in their pitched battle both were placed in such a position that both would receive a death wound at the same time, nature or instinct would teach them to desist, and avoid a close onset for the purpose of preserving one alive.

A few days since something very singular occurred with my own bees, which goes to disprove this assertion. On the 15th of June, at 1 o'clock P. M., a second swarm came out of one of my hives. I soon had them hived and placed upon the stand close by the old hive. In the afternoon they were very quiet, and none left the hive for forage. The following day being very warm and close, they kept unusually quiet, and I soon perceived that there was something wrong. At 11 o'clock A. M., they all rushed out of the hive with great noise and confusion, and I expected they would soon leave for the woods, but contrary to my expectations, they all returned again to the old hive. I soon, however, discovered the cause of this strange movement. On the bottom-board I found two dead queens, and in all probability, the only two that were with the young swarm. In their contest for the mastery, they probably both inflicted at the same moment a death wound, and as soon as the bees discovered their loss, they again returned to their old habitation. I could discover no trace of combs in the new hive, and hence I have reason to believe that the bees were almost twenty-four hours silent spectators of the furious and deadly contest.

Catawissa, Pa., June 1846.

WILLIAM J. EYER.



## OUR ENGRAVING.

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\* THE well executed and life-like engraving which accompanies this number of the Cultivator, represents a pair of three years old steers, bred and reared by JAMES S. WADSWORTH, Esq. of Geneseo, to which one of the premiums was awarded at the show of the New-York State Agricultural Society, at Utica. One of them, we were informed, was a full-blood Durham, and the other three-fourths of that breed. They were very fine steers, exceeding in size and symmetry any other we have ever seen of their age. Their uncommon growth and tendency to fatten, induced their owner to dispose of them for beef at an early age; they were, therefore, with seven other cattle, transported *via* railroad, and sold at Boston, in February last. As the lot passed through this city, we had an opportunity of seeing them, and have no hesitation in declaring that we have never seen them equalled by any similar number. The live weight, (we never learned the dead weight,) of the subjects of our plate, was 3,965 pounds. The lot consisted of ten head, one of which, a remarkably fat ox of six years old, was slaughtered in this city weighing, dressed, 2,061 pounds. There was one cow, (a full blood Durham,) in the lot, and four of them, including the steers whose portraits are here given, were under four years old, yet the aggregate live weight of the ten, was 14,295 pounds.

Mr. WADSWORTH and his brother, have been frequent and successful competitors for premiums on stock, particularly working oxen, at the shows of the State Society. Many of our readers will recollect a splendid team of ten yoke of oxen which they exhibited at Poughkeepsie—three yoke of which obtained the first premium offered on that number. Their display at the Utica show was still more attractive. Besides several yoke of steers, they presented a train of ten yoke of working oxen of the finest appearance, which received the first premium offered for that number from any one town. A very superior pair of four-year-olds from this noble team, received the second premium offered for the best single yoke of working oxen.

The vast domain of Mr. WADSWORTH and his family connexion, in the county of Genesee, is devoted largely to grazing. Mr. W.'s home farm consists of thirteen hundred acres, of which he usually mows about six hundred acres, and obtains an average yield of two tons of hay per acre. He kept on this farm last winter 260 head of cattle, and he usually summers from 400 to 500. They are mostly steers, bought of the tenants on other portions of the estate. After having been allowed to run for a season on the rich pastures of the Genesee flats, they are sold off to drovers.

It is proper to say that Mr. WADSWORTH, besides being a spirited competitor for premiums, is a most liberal supporter of agricultural societies, and an earnest patron of agricultural improvement generally. He for two years occupied the post of presiding officer of the New-York State Ag. Society, whose affairs he managed with an efficiency and judicious care alike creditable to himself and beneficial to the association.

## THE FARMER'S BANK.

.....

L. TUCKER, Esq.—Why may not every farmer be his own banker?

Every farmer *may effectually* be his own banker if he chooses; he has the right, he has the power, he has the means at his own command, and by the exercise of this right, this power, and these means, he can be benefitted far more than by any investment of capital in the general banks now in use.

The bank I allude to is the Farmer's Bank of Manure, the location in his own barn-yard. This is a bank that can never fail, can never be insolvent. He subjects himself to no protests, he lives in no fear of a suspension of payment, he needs no bolts, bars or locks to secure him from the midnight robber, there is no cashier to tell him when he presents himself to this bank for

means to carry on his farming operations that a discount is required to grant him a favor, or to tell him his endorser is not good or sufficient. He is not confined to a limited number of days, with a *little grace* beyond it; and when he draws his check he has no fear of being told by Mr. President, Mr. Cashier, or Mr. Teller, that there is not any funds placed to his credit.

Then let every farmer, if he has not done so already, securely arrange his barn-yard in such a manner that none of the deposits can be squandered until he removes them himself.

If the farmer owns *stock* in this bank he suffers no perplexity or anxiety of mind that he may not have a semi-annual or annual dividend declared of less than the lawful interest of his money, but he can rest assured that his dividend will be the real substantial of life to his pocket and family, viz., pork, beef, butter, cheese, money, &c. There are many of the common banks that have the words "Farmer's Bank of" prefixed to the place where they belong, apparently to induce the farmer to believe that they are for his own especial benefit. Beware of them! Do not be drawn into their snare. There is a class of men and business which these banks may perhaps benefit; but the farmers, who may be justly styled the corner stone of our republic, they can never benefit as will their own bank, *the Farmer's Bank of Manure*.

A. H. HALLECK.

Westmoreland, N. Y.

## AGRICULTURE OF OTSEGO COUNTY, N. Y.

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MR. TUCKER—I have been sojourning awhile in Otsego county, and I thought perhaps I might extract something from my notes that would be interesting to your readers.

Otsego is rather elevated, containing the head waters of the Susquehannah; hilly, but not mountainous, most of the hills being susceptible of cultivation to their summits. The principal articles sent to market are butter, cheese, wool, pork, fat cattle and sheep, oats, barley, and hops; and by the way, this last article is all the rage in some parts of the county just now. But on the whole, the wool-growing and dairying business take the lead; and say what you please of Old England or *Dutchland*, I never ate better butter or cheese than at some of the tables in Otsego.

The farming here is somewhat peculiar; the arable land is divided into meadow and pasture; the meadows receive the manure, and in them a rotation of crops is pursued, and frequently four or five different kinds of grain, besides grass, are to be seen in the same field. When the pastures are supposed to be "rich enough," they are plowed, and a crop or two of grain taken, and then seeded again to grass.

The attention of the traveller is often attracted to the numerous little mills for sawing wood—propelled by water power, and placed on almost every rivulet; they are used for a few days in the spring when the snows are melting and the streams high. The trunks of trees are hauled to the mill, and a man will saw from eight to ten cords in a day, "stove length," and thus save many "hard knocks."

The diversified face of the country gives many beautiful sites for cottages, and in some instances nature has been aided by art, but in the majority of cases you will find nothing to relieve the monotony of that eternal row of maple trees, straight as a Lancaster rifle, and the trees just so many inches apart. Now I have nothing against maple trees "in the abstract," only let them be more *Downingized*, that is, have more of a come-by-chance arrangement.

RAMBLER.

Butternuts, 1846.

HEAVY CROPS.—In the fourth report of the Agricultural Commissioner of Massachusetts, instances are given where 105, 110, 113, 115, and 117 bushels of corn have been harvested from one acre; and 400, 484, and 513 bushels of potatoes.

## SUCCESSFUL FARMING.

.....

For judicious and economical management, few farms that we have ever visited will compare with that of A. VAN BERGEN, Esq., situated about three miles from Cossackie landing. It consists of 700 acres, lying mostly in a body, about 500 acres being cleared, and the remainder wood-land. The nett proceeds from sales for the last ten years, have been from \$2000 to \$6000 yearly.

The STAPLE PRODUCT is hay. About 300 acres are this year in mowing. The average yield is from a ton to a ton and a half per acre. The hay is pressed on the farm, and shipped to New-York. The price obtained per ton in that market, is from \$10 to \$16.

The mowing-grounds are laid out in large lots, thus obviating the expense and trouble of many inland fences. There are 212 acres in one field. One side of this field, embracing twenty to thirty acres, having the benefit of the wash from the highway, has been in grass for forty successive years, and has yielded annually from one and a half to two tons per acre. But the usual course is to break up the meadows once in four or five years, take a crop of corn and a crop of oats, and then seed down again with timothy and red-top. Top-dressings of manure are sometimes given, in connexion with which the sward is scarified, some grass-seed sown if required, and the surface made smooth with the roller.

The mode practised by Mr. V. B. in making hay is deserving note. The grass is never cut while wet with dew or rain; thus, from its dryness, it does not pack in the swath, but is so light that it admits the air, and dries rapidly without being spread. From the swath the hay is put into small grass-cocks. This is done very expeditiously with large wooden forks—one man being able to accomplish more in this manner than three or four could with rakes. The next day the cocks are turned over for the moisture of the bottoms to dry off, which in good hay-weather is all that is done before taking the hay to the barn. But if there is a prospect of rain, the cocks are carefully doubled and trimmed. After the bulk of the hay—that is, what was put in cock—has been carried off, the scatterings are collected with a spring-tooth horse-rake, an implement which answers admirably for this purpose, as well as for another, of which we shall speak presently.

This mode of making hay we think a very cheap one, and it seems to answer well in this case. It should be remarked, however, that as Mr. VAN BERGEN sells his hay, a considerable object is to obtain the greatest weight with the least expense; most of the grass, therefore, is not cut till it has reached such a state of ripeness that the curing is effected with much less labor than it could be at an earlier stage.

LAND UNDER CULTIVATION.—Mr. VAN BERGEN has this year about 100 acres under the plow, viz: 32 acres in corn and beans, (in alternate rows,) 40 in fallow, with beans in rows ten feet apart, 8 in potatoes, 10 in oats, and the remainder in buckwheat.

The cultivation is admirably conducted; the work is done in the most thorough manner, and with the least possible expenditure of cost. The soil, though of a character commonly called "strong," is not, on the whole, of a nature favorable to crops. A great portion of it is too flat, and it is mostly of a very tenacious texture, with a cold, compact subsoil, which does not admit of the free descent of water. For these reasons crops are liable to suffer both from the excess and deficiency of water. If there is much rain, the soil is made into mud, and from being thus run together, it bakes so hard when dry that the plants cannot extend their roots.

We mention these disadvantageous circumstances, as they serve to show in a more striking manner, the superior skill and judgment used in cultivation. Against obstacles which really would have induced many farmers to relinquish the idea of obtaining profitable crops. Mr. VAN BERGEN has persevered, and has received for his well-directed labors an abundant "recompense of re-

ward." Sixty bushels of corn per acre, and from forty to sixty bushels of oats, have not unfrequently been taken from such land as we have described.

That these crops have been obtained at small comparative cost, will be inferred from the fact that three men, under the direction of Mr. VAN BERGEN, have done all the hand labor on the farm, from the opening of spring to the 1st of June. The secret of accomplishing so much with so few hands, lies in the performance of much the greatest portion of the work by improved implements drawn by horses. We cannot give at this time a particular description of these implements and the manner in which they are used, but hope to obtain cuts before long, of some which we consider particularly valuable. It may be observed, however, that in cultivating the crops above-mentioned, Mr. V. B. uses no less than three kinds of plows, three kinds of cultivators, and a harrow besides a spring-tooth horse-rake, which is made, in some instances, to do the work of a harrow in an improved style.

In plowing, as well as in all the after-culture, particular regard is paid to adapting the work to the nature and tendencies of the soil. The first object is to obviate the difficulties arising from the water remaining too long on, or near the surface. For this purpose the land is laid partly in beds with open channels so disposed as to facilitate as much as possible the discharge of the water. The land is next thoroughly subsoiled to the depth of fifteen to seventeen inches. In the course of culture, particular attention is paid to keeping the soil open, which is effected by the use of tools which penetrate and loosen to a considerable depth. The thirty acres of corn and beans which we have mentioned, were managed from first to last, entirely without the hand-hoe, and yet we have never seen an example of more clean and perfect cultivation than the field presents. Mr. VAN BERGEN assures us that a man and a boy will readily tend forty acres of corn, on his system, in a season, and that too in the most thorough manner—not run over so as to have the ground full of "unclean things," as we have too often witnessed on the corn-lands of the west.

The bean crop of which we have spoken, was planted with Lewis' Seed-Planter, an implement with which Mr. VAN BERGEN is much pleased. It is drawn by a horse, and does the work with great precision and dispatch. Mr. V. B. intends to use it hereafter for planting corn.

Mr. VAN BERGEN's fallows are managed on the true plan. The object is to clean the land, and this is done most completely. The land is alternately worked with cultivators, or "gang-plows," paring cultivators, and the spring-tooth horse-rake. The cultivators or gang-plows leave the ground in small ridges, a foot apart; the parers, which are narrow plates of steel of lengths varying from one foot to three feet, are made to shave the surface, which levels the ridges and cuts clean all vegetation; the horse-rake, which is made of extra-sized wire to fit it for this purpose, follows after, rakes the ground smooth, collects weeds or grass where there is any, and leaves the ground in the most beautiful condition. These different operations are repeated in the course of the season at various intervals, as may be necessary to keep the soil clean and light. The last operation before sowing winter grain, is to put the land in the small ridges, (as described before) by the gang-plows; on these ridges the grain is sown, and is then harrowed in with the horse-rake, which running lengthwise the ridges, brings the grain in regular rows, a foot apart.

The gang-plows and the largest sized cultivators, are drawn by two horses. Some of them work a breadth of nine feet at once, and a man and pair of horses will work over from fifteen to twenty acres of fallow land a day, with one of them. Mr. V. B. has lately made one still larger than those we have mentioned, which cuts a space of ten feet in width, and requires three horses to draw it. It is designed partly as a scarifier for grass-grounds, and partly to clean the foul growth from the fallows; and is at the same time so contrived that differently shaped tools may be readily fitted to it, so that at option it is metamorphosed from



a scarifier to a mammoth cultivator, or set of gang-plows.

It may be observed in passing, that Mr. VAN BERGEN makes considerable use of the subsoil plow in draining his grass lands. It answers in this case a similar purpose to the *mole plow*. The implement is passed through the sward in such places as would be likely to effect the most drainage, and a channel is thus made which not only takes the water from the surface of the land, but conducts it off to natural courses. The plow does not turn over the sward, but only raises it, so that the grass grows as well or better immediately over the channels as in other places. These spaces made by the subsoil plow remain open for two years, and are of great advantage.

**INJURY BY THE WIRE-WORM.**—Mr. VAN BERGEN'S crops have been greatly injured this year by the wire-worm. His wheat and corn have been almost totally destroyed; his oats have been considerably cut off, and even his beans have not escaped; and judging from the numbers which on examination we found preying on their roots, their chance of affording a crop must be small indeed. He has not found any mode of counter-acting their ravages.

**LIVE STOCK.**—Three pair of horses are kept by Mr. VAN BERGEN, which perform all the team-work on the farm, as well as all other service required by horses. A yoke of oxen have formerly been kept, in addition to the horses, but this season their use has been discontinued.

A small stock only is kept. The cows, ten in number, are mostly Durhams, Ayrshires, and grades of these breeds. Several of the Durhams were imported. They are evidently of a milking family, and show excellent points for the dairy. The Ayrshires are very pretty stock—silky haired, clean skinned, small boned, with all the indications of first rate dairy-stock. Mr. V. B. formerly fattened calves for the New-York market. He usually sold them at from five to ten weeks old, and obtained for them an average price of \$9 per head. He sold one year 160 calves fattened by himself. The business proved profitable for several years; but competition after awhile, reduced the profits, till it became no longer an object.

**CONCLUSION.**—Mr. VAN BERGEN'S farming must, on the whole, be considered eminently successful. Many, very many farmers, even with greatly superior advantages of soil, do not obtain anything like as good crops on the average, or realize half as good profits on their capital invested in farming. What is the cause of this success? is the question obviously suggested. We answer, it is to be found in the fact that "KNOWLEDGE IS POWER." A MIND well balanced, well disciplined, and discriminating, here exerts its energies; and the effect is seen in the systematic plan on which the various operations are based, and in the highly satisfactory pecuniary returns which are the ultimate results.

After having spent several hours in the examination of Mr. VAN BERGEN'S farm, we called for a short time at the residence of Mr. REED, about a mile from Coxackie. We were unfortunate in not finding him at home, and therefore took but a hasty stroll about the premises; though we saw sufficient to convince us that the farm was a good one, and that it was in many respects a beautiful place. The site commands a delightful view of the river, with fine prospect scenes on either side. The buildings are mostly new, well constructed, and well arranged. The garden, which we went through, is prettily laid out, and is a perfect model of neatness—not a single weed being found in any part of it. We noticed that there were quite extensive orchards, which appear to have been properly managed; and we were told that 2,200 bushels of winter apples had been sold from the farm in a year.

**SOAKING CORN.**—A successful farmer effects a saving of a third to one-half by soaking his corn fed to horses in water, in barrels placed in the cellar, where it cannot freeze.

MR. TUCKER—Your columns are seldom devoted to the *fine arts*, nevertheless I venture to send you a song, which may not be inappropriate to a corner in your excellent paper. That the farmer has as good reason to sing as any other man, I suppose no one will deny, and if song-singing is admissible, perhaps this will be found as expressive and unexceptionable as any other, howbeit a te-totaller might think it smacked somewhat of hard cider. I believe the song is old, but I have never seen it in print.

W.

#### THE HARVEST HOME.

.....

When autumn freely yields  
All her golden treasures,  
Then those who reap the fields,  
Partake of harvest pleasures.  
This, lads, is harvest home;  
Those who labor daily,  
Well know 'tis sweet to come,  
And pass the evening gaily.  
Then let each heart be light,  
Here's no room for sorrow,  
Joy holds her court to-night,  
Care may come to-morrow.

Now let the lab'rer wipe his brow,  
Rest and plenty wait him  
Barn, cellar, rick, and mow,  
Are fill'd to recreate him.  
Sythe, sickle, rake, and hoe,  
All are now suspended,  
Like trophies in a row,  
For future use intended.  
Then let each heart be light, &c.

Now gay Pomona's store,  
Past exertion blesses,  
Rich streams of nectar pour,  
Sparkling from her presses.  
Full goblets streaming broad,  
Crown the farmer's labors,  
These real bliss afford,  
When shared by friendly neighbors.  
Then let each heart be light,  
Here's no room for sorrow,  
Joy holds her court to-night,  
Care may come to-morrow.

#### MEETING OF WOOL-GROWERS.

.....

WE learn by the *Lowell Courier*, that a meeting of wool-growers was held in that city on the first of July; and by the following extract, it will be seen that an arrangement has been formed for the purpose of ascertaining the comparative value of different flocks of sheep for the production of wool, among the Saxon and Merino varieties. Important facts will no doubt be elicited by this arrangement, and we trust they will all be duly laid before the public. In regard to the flocks to which merit shall be awarded, it will be specially important and interesting to know, fully, the course which has been pursued in bringing them to a state of excellence; and we hope to be informed how those flocks have been derived, and how, for several generations, they have been bred and managed. We desire this information as furnishing the proper data from which to deduct a correct system of breeding and management.

.....

At a meeting of wool-growers, holden at the office of the Middlesex Company, in Lowell, Mass., on the first day of July, 1846, representatives from the eight following states being present, viz., Massachusetts, New-Hampshire, Vermont, Connecticut, New-York, Pennsylvania, Virginia, and Ohio. Samuel Lawrence, Esq., of Massachusetts, was called to the chair, and G. Dana, of Ohio, appointed Secretary. After opening the meeting, an important and very interesting discussion took place on the relative properties of the Saxon and Merino sheep, and more especially of their fleeces, in which Mr. Brown, (of the firm of Perkins and Brown, of Akron, Ohio,) as advocate for the excellence of the

Saxon breed, and Mr. Jacob N. Blakeslee, of Connecticut, advocate for the Merino breed, largely and most interestingly participated. These gentlemen, after various propositions with the aid and approbation of the meeting, came to and agreed upon the following manner of testing, and as far as could be done, settling the question of the relative value of these two important breeds of sheep.

Perkins & Brown, in the presence of Guy Walcott, of Summit county, Ohio, are to select forty lambs, which said Walcott is to see shorn, and is to certify that they were of the flock and bred by said Perkins & Brown, and that they were shorn at or about one year of age, and at the clip of 1847. The said Blakeslee is to select a like number from his flock, which are to be shorn at the same age, in presence of N. B. Smith, of Connecticut, at the clip of 1847, who is to make a like certificate as the one described—which certificates are to accompany the wool of the said lambs to the Middlesex Company, and to be placed in the hands of Samuel Lawrence Esq., who is to be the umpire to decide upon the merits of the two lots; and it is understood that the wool is to be stapled and scoured, and the value of each fleece placed against it—and to give to the gentlemen competitors and the world, his decision and his views at large on the comparative excellence of the two kinds of sheep and their fleeces; and the wool-growers throughout the United States are respectfully and earnestly invited to participate in this competition, the results of which are deemed important to the wool interest, and to shear at the clip of 1847, a like number of lambs, (and if there be any variation from one year in the age, have the certificate state that variation particularly,) and to obtain the proper and well authenticated certificates, and send them with the clip to the above-named umpire, who will report upon the whole, and award the meed of honor to whom it may be due, and make the report public. The reader will understand that Perkins & Brown have a very choice flock of Saxons, and Mr. Blakeslee, a very choice flock of Merinos.

It was unanimously voted that this report be signed by the chairman and secretary, and published in the Lowell Courier, and that the papers friendly to the wool interest throughout the country be requested to copy.

SAMUEL LAWRENCE, Ch'n.

GEORGE DANA, Sec'y.

#### SHEEP AND WOOL

.....

WE have received a communication from Mr. JACOB N. BLAKESLEE, of Watertown, Ct., on the subject of sheep and wool, from which we make the following extracts.

In reference to breeding sheep, Mr. B. makes an observation, the truth of which we think all will admit, viz., that "It is one thing to collect a fine flock of sheep by selecting here and there one from the finest flocks in the whole country; and it is quite another and much more difficult thing, to improve a flock by the art of breeding. In the former case, improvement is only transferred from one to another; in the latter, the real value of property is actually increased."

Mr. B. thinks too many wool-growers in this country have run into extremes. He says—"after the introduction of Saxon sheep to this country, it seemed to be the great aim of the wool-growers to produce the finest wool, without regard to the weight of fleece or the constitution of the sheep. After awhile many saw their error. The next move was to see how great a fleece could be got, without regard to fineness and softness. These are the two extremes; let them be shunned, and let it be the endeavor of the wool-grower to combine as many valuable and essential qualities as possible in the same animal, or in the same flock of sheep."

"In selecting male animals for breeders, we should take great pains to procure those of pure blood and the most perfect forms. At least three out of four animals partake largely, in their outward coat and appearance,

of the male parent. In breeding fine-wooled sheep, this is an object of great importance, as their outward coat constitutes nine-tenths of their value.

"I have always bred from the best buck I could raise or find, but since I purchased the one in 1828, bred by Daniel Bacon, [see Cultivator, for 1844, p. 335,] I have not been able to find one not of my own breeding that suited me to use in my own flock. \* \* \* I never sell any of my best ewes till they are advanced in years."

#### AGRICULTURAL STATISTICS OF NEW-YORK.

.....

MR. TUCKER—The June number of your most excellent Cultivator is now before me, and I cannot omit here to express the pleasure and satisfaction which I have derived from the perusal thereof. It is, and has long been a matter of surprise to me, that a periodical whose every page teems with matter of the greatest interest and usefulness to the farmer should not receive a large addition to its already extensive list of subscribers.

I have taken up my pen now more particularly to call your attention, and that of your readers, to an article in the June number, which will no doubt be extensively copied into other journals throughout this country not only, but also abroad, containing errors in some of its details calculated to give a wrong impression, and which I think should be immediately corrected.

I refer to the agricultural statistics of this state, furnished to you by Mr. Randall. Statistics form the basis of all human calculations, and it is therefore of the greatest importance that when given to the public they should be in all respects absolutely and positively correct.

So much of the article of Mr. R. as refers to the population, number of horses, cattle, horses, sheep, swine, and the produce and average yield per acre of wheat, is probably correct. But when he states the average yield per acre of *spring crops*, he dips into a very extensive error, as he himself will perceive by referring carefully to the returns of the marshals.

The census was taken the first day of July, 1845. The number of acres at that time under corn, rye, oats, barley, buckwheat, peas, beans, flax, potatoes, and turneps, was the number returned by the marshals, while the amount given of the produce of each of these articles was that of the previous year, 1844, and a correct average yield per acre cannot thereby be made to appear.

But let us look at the dairying operations. The marshals give us the number of cows that were milked in July, 1845, and the amount of butter and cheese made during the year 1844. Of course the average yield per cow is incorrect.

When the marshal of our town called upon me, I remonstrated with him on the subject, and the census of our town at least would have been taken in a proper manner had not the circular of the Hon. Secretary of State been issued. That profound paper directed the marshals to proceed precisely in the manner they did proceed, thus giving to the public a collection of agricultural statistics which are worthless. J. L. H.

Castile, Wyoming Co., N. Y.

#### WHEAT AND CHESS—AN INCIDENT.

.....

I lately made a short journey in company with an intelligent and experienced farmer, whose fine farm and heavy crops have long told the skill with which he managed his business, when the conversation turned upon the transmutation of wheat to chess. He mentioned several strong cases to prove the change of one plant to the other—cases where clean seed had been sown on new land, and heavy crops of chess were the result. As is usual in such cases, unless I could assign a satisfactory cause, though knowing nothing of the circumstances, the assumed and unsatisfactory explanation by transmutation, was regarded by my friend as the



only true one. I mentioned the observations I had made on chess—its small and hard seeds allowing it to be carried about in the stomachs of animals, birds, &c., while the land was yet forests, and thus distributed; its astonishing productiveness where it could flourish, as where wheat had been killed, and the chess remaining the undisturbed occupant, yielding and scattering sometimes 3000 to 5000 seeds from a single grain, as I had counted; and again when shaded by heavy wheat or grass, being two inches high with only a single grain, as I had also observed. Collateral cases were named where supposed clean land, or new land, had been plowed and produced as spontaneous crops, a dense growth of pig-weed, in one case, and fox-tail grass, in the other case. But this was not quite satisfactory to my friend. I then stated that I had often examined what was called clean seed wheat, and found on a careful search, chess enough to seed the ground for a tolerable chess crop. Being about to make a call on an excellent and skilful farmer, I determined to prove my position; and so, the first opportunity, we examined some very fine seed wheat. It was pronounced by all parties as remarkably clean. Having scarcely ever failed in finding chess, I began the search, confident of gaining my point; but after a long and careful examination, I utterly failed. Not a grain of chess could be found. At last, turning to the owner of the seed, I inquired, "Don't you ever raise any chess?"—"NO!" was the prompt and decided answer, "I have completely eradicated the weed from my farm—I sow none but clean seed, really so, not apparently; and where my wheat is winter-killed, no chess springs up in its place, stooling out on all sides for a heavy crop. Whatever others may experience, I find that chess will not grow unless it is first sown."

The argument was finished.

X.

#### MR. COLMAN'S EUROPEAN AGRICULTURE—PART VI.

The principal subjects of this number are, Paring and Burning, Admixture of Soils, Improvement of Peat Lands, Warping and Drainage.

The operation of paring and burning, to which the first chapter is devoted, has been long practised, although its utility has been much controverted. In reference to the contradictory opinions which have been held on the subject, however, the remarks of the Rev. W. L. RHAM (Dictionary of the Farm, p. 368,) may be given as affording a rational explanation. "When we come," says Mr. R., "to apply to the subject the test of experience, and reason correctly on the facts which are presented to us by the abettors of the practice and its adversaries, we shall find that the advantages and disadvantages arise chiefly from the circumstances under which the operation is carried on.

Mr. COLMAN remarks, that the objects of paring and burning are three fold:—"the first, to reduce the coarse vegetable matter on the surface to a state of decomposition, that it may be supplanted by a more profitable vegetation; the second, to destroy grubs, insects, and the larvæ of insects, which infest the soils, and are pernicious to the cultivated crops; and the third, to convert the coarse vegetable matter on the surface into ashes, for nutriment of the crops which are to follow."

Mr. C. describes, with considerable minuteness, the process of paring and burning, and believing that his description may be read with advantage by a large portion of our readers, we give it at length.

"In the process of paring and burning, a thin slice, or turf, varying from one to three inches [in thickness] is taken from the surface, and after being sufficiently dried, is cut into pieces of a convenient length, and then piled in heaps preparatory to being burned and reduced to ashes. The turf is cut sometimes with a plow with a broad share, of the width of the slice desired to be raised, or, otherwise, with a spade made with a flange or wing on one side of the blade, resembling, in this respect, a spade for the cutting of peat, and with a long curved handle with a cross-piece at the end, by which it is forced under the sward by a pressure against the thighs of the workman. The work,

when performed with the spade, is deemed severe, and it is considered a sufficient day's work for a man to accomplish a quarter of an acre.

"The sods, when collected, are piled in heaps of a larger or smaller size, according to the convenience of the operator, pains being taken to form a sort of furnace beneath, in which are placed some brush-wood, fagots, or coal, as in the oven of a brick-kiln. The sods are piled over this, and, fire being kindled, attention is paid to prevent its blazing out, so that whenever a hole is found, by which the fire might escape, it is immediately filled with fresh earth; and as the fire advances, new sods are occasionally heaped upon the pile; the object being to reduce the whole to ashes by a smouldering fire. It is surprising to find to what a fine state the sods and vegetable matter may be reduced, and how the burning will continue to go on, though the whole seems to be in a perfect state of quiescence. A thorough burning requires frequently a month, or a longer time for its completion.

"The head-lands of a field are occasionally burned without the rest of the field being subjected to the same process. Here there is always an accumulation of soil and a collection of rubbish, coarse grass, weeds, or bushes; and all these are dug up occasionally to the depth of six or ten inches, and piled in heaps and burned as I have described. In cases where the whole is not consumed, the part which is not sufficiently reduced by the action of the fire, is transferred to another heap. Two or three pieces of advice are commonly given in regard to the management of this burning. One is, not to make the heaps too large in the beginning, as the weight of the incumbent mass is liable to extinguish the fire, but to heap it up gradually as the fire goes on; the second is, not to allow the fire to blaze out, as else it would soon burn itself out; and a third is, not to make the fire too hot, as otherwise much of the earth, instead of being made to crumble, and reduced to a friable state, would become baked hard, like bricks.

"The ashes, then, of these heaps are evenly spread over the fields operated upon, and this is generally followed by a green crop, such as vetches or turneps, which, under good management, are consumed on the ground. Then follows the usual course of wheat, barley, and grass. The amount of ashes obtained by the ordinary process of paring and burning, has been made the subject of exact calculation, and is so remarkable that I deem it worth stating. 'An acre of land, from which the turf was taken in the common mode of paring and burning, appeared to have produced an average of 2660 bushels of ashes, which, at their mean weight of 65 pounds to a bushel, when dry, would give 172,900 pounds, or rather more than 77 tons per acre.'

Mr. COLMAN observes, that as the process of burning dissipates, more or less, the vegetable matter of the soil, we must look to the ashes produced as some compensation for this loss. The ashes, he believes, "are powerful absorbents and retainers of moisture, and they answer a valuable purpose in the disintegration, or loosening of the soil. They certainly, in many cases, operate as efficient manure; I have seen their effects often, both upon old and new land. In examining the returns of nearly four thousand different wheat crops in Massachusetts, in which, with a view to secure the premium offered by the state upon the cultivation of wheat, it was required to give the mode of culture in detail, I found, in every case, where ashes were applied to manure the crop, the beneficial effects were emphatically affirmed. In clearing new land, it has been the custom to fell the standing wood, and after it has become sufficiently dried, to burn it completely upon the land. This always leaves a large deposit of ashes on the ground. It is common to plant Indian corn directly upon these ashes, without plowing the land, and, at the close of the season, at the last hoeing of the corn, or indeed its only hoeing, to sow wheat among it, which, to use the common phrase, is 'hacked in' by the hoe. Some of the largest crops of Indian corn and of wheat, which I have ever heard of, have been grown in this way. In one case, upon a very large field, the product of wheat averaged sixty-four bushels to the acre."

But though the advantages of paring and burning on some kinds of soil, seem to have been well demonstrated in many cases, it appears to be equally certain that on dry, sandy soil, the practice is not to be recommended. Mr. COLMAN therefore observes:

"The expediency of paring and burning land, must, as I have remarked, depend upon the nature of the soil which is to be subjected to the process. On light, sandy, or gravelly soils, where the vegetation is thin and sparse, it is strongly objectionable."

Under the head of "BURNING LAND," a process different, in some respects, from ordinary paring and burning, Mr. COLMAN further discusses the principles upon which are supposed to rest the advantages of both these operations. The objects of burning lands are said to be applicable only to stiff, clay soils. The chief objects are to render it friable and destroy its adhesiveness. "The process," says Mr. C., "consists in digging, either with a plow or spade, the whole top-soil of a field, and placing it in small heaps, with a furnace, or oven under them, where a fire of coal, or faggots, or brush-wood may be kindled and continue to burn until the whole is, properly speaking, reduced to an ash-heap, as far as the nature of the substance so reduced admits of being so designated. Where I have seen the process carried on, the depth of soil so dug and burned, did not much exceed a foot; but I have been made acquainted with one experiment where the depth of soil so moved and reduced was three feet."

Mr. C. is decidedly of the opinion, from all the evidence he has been able to collect, that "the opening of clayey and adhesive soils by burning them, so as to make them easily worked, and rendering them accessible to air, and moisture, and light, and heat, is an obvious and decided advantage."

The most reasonable explanation which we have seen of the causes, which probably operate to increase fertility in soils which have been subject to burning, is furnished by Mr. C. in an extract from Liebig's Agricultural Chemistry.

"The advantage" (says LIEBIG,) "of manuring fields with burned clay, and the fertility of ferruginous soils, which have been considered as facts so incomprehensible, may be explained in an equally simple manner. They have been ascribed to the great attraction for water exerted by dry clay and ferruginous earth; but common dry, arable land, possesses this property in as great a degree; and besides, what influence can be ascribed to a hundred pounds of water spread over an acre of land in a condition in which it cannot be serviceable either by the roots or leaves?"

"The true cause is this: The oxides of iron and alumina are distinguished from all other metallic oxides, by their power of forming solid compounds with ammonia. The precipitates obtained by the addition of ammonia to salts of alumina or iron, are true salts, in which the ammonia is obtained as a base. Minerals containing alumina, or oxide of iron, also possess in an eminent degree the property of attracting ammonia from the atmosphere and retaining it. \* \* \* Soils, therefore, which contain oxides of iron and burned clay, must absorb ammonia—an action which is favored by their porous condition. They further prevent the escape of ammonia, once absorbed by their chemical properties. \* \* \* The addition of burned clay to soils has also a secondary influence. It renders the soil porous, and therefore more permeable to air and moisture. The ammonia absorbed by the clay of ferruginous oxides is separated by every shower of rain, and conveyed in solution to the soil."

THE VIRGALIEU PEAR, (or *Doyenné, Butter*, or *St. Michael*.) considered in Western New-York as the finest of pears, all things considered, long since in the Vicinity of Boston "run out" from the old age of the variety, as was supposed. B. V. French, an eminent cultivator, stated at a late agricultural meeting in the Boston State House, "that it now appeared to be returning to its former health, vigor, and excellence."

#### GAS-WATER TO KILL INSECTS.

.....

A writer in the *Gardener's Chronicle* states that he has derived great advantage from the use of gas-water in destroying, or driving away insects. He states that he has tried it of various strengths, but concludes it should be diluted in six times its quantity of pure water, or it cannot be applied without injury to vegetation. At this strength he has found it almost instantaneously destructive to snails and slugs, and drives away almost every species of worm. We suppose the gas-water to be what is here called the ammonical liquid of gas-works. *Gardener's Dictionary* states that it consists of water holding in solution carbonate, muriate, and sulphate of ammonia, with impurities; 100 gallons containing 25 pounds of these salts. It is thought highly valuable to mix with compost, as manure—to be used at the rate of 100 lbs. per acre. It is said to have in some instances trebled the yield of grass.

#### NOVELTY IN BEE-HIVES.

.....

THE Report of the Commissioner of Patents speaks of a newly invented bee-hive, which we take to be the latest if not the greatest novelty in that line. The great aim has for several years been to protect the bees from the attack of the moth, and many have been the contrivances invented for this purpose. The hive alluded to, has a *hen-roost* combined with it, the connection between the roost and hive being such that the hens on going to the roost shut up the entrance to the hive, and bar out the moths—the latter only attacking the hive at evening or during the night. In the morning, the hens, on passing from the roost, open the hive and let out the bees to commence their daily toil. But IMPROVEMENT and novelty are two things.

#### DISEASE IN CHERRY TREES.

.....

MR. TUCKER—On a recent visit to Ohio, in the vicinity of Cincinnati, I observed that the past winter has been fatal to most of the finer varieties of the cherry tree.

Some of the Cultivators informed me that they feared they should be under the necessity of abandoning altogether the cultivation of this early and delicious fruit.

On examination, I discovered that the trees are first affected on the south-east side of the stem, showing a dead strip from the ground to the lower branches, many of them leaving out, but soon wither and die.

I attribute the cause of the destruction of this tree, not to the effects of severe frost, but to the frequent and sudden thawing by the morning sun.

The trees generally survive but two or three winters after being transplanted; for as soon as they become firmly rooted, the increased size of the sap vessels, the consequence of rapid growth, renders them liable to be thus affected.

I would propose as a cheap and effectual remedy, the following:

Take two strips of boards, say from four to six inches wide, and long enough to extend from the ground to the lower branches, and nail the two edges together at right angles, and during winter place one of these on the south side of each tree, securing them by two strings. These may be stowed away in summer, occupying but little space, and will last an age.

Albany, July, 1846.

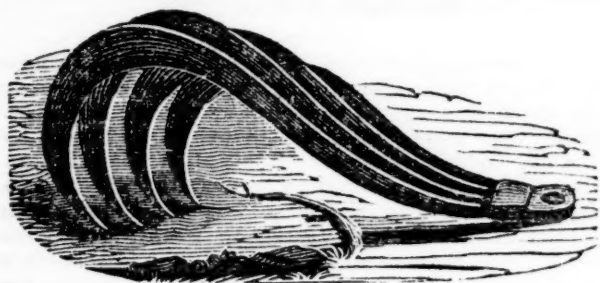
H. P. BYRAM.

#### GLASS MILK-PANS.

.....

WHY can't we have glass milk-pans in this country? They are being introduced in the English dairies, and are much liked. They are said to be much more easily cleaned than pans of any other materials, and are so strong that they will bear a very severe blow without breaking. The only objection to them is their cost, which, on account of duties, is rendered high. We suppose they might be afforded cheaply in this country.





ROOT AND BUSH PULLER.—(Fig. 68.)

AUGUST and the fore part of September are the best months for clearing and improving boggy and wet lands. Such lands are often more or less covered with small trees, or bushes which grow in stools or clumps. The implement above represented is very effective in tearing out such trees or bushes. It is made of iron and is very strong. The ground is first (if the roots are large) loosened around from the centre of the stool, when the claw is fastened to one side, and a pair of oxen are attached by means of a chain to the implement, and the roots are forthwith "twitched" out. One man and a smart yoke of oxen with this tool, will do the work of ten men.

#### RECENT AMERICAN PATENTS.

Reported for "The Cultivator," by ZENAS C. ROBBINS, Mechanical Engineer, and Agent for procuring Patents, Washington, D. C.

For an improvement in self-acting BRAKES for CARRIAGES; John Dubois, Jr., Trout Run, Lycoming Co., Pa., June 13, 1846.

*Claim.*—"What I claim as my invention, and desire to secure by letters-patent, is the placing on the rear ends of the extended hands (C, C,) which support the pole, an adjustable movable sway-bar, (E,) having brakes or rubbers attached to each of its extended ends in a position to act on the forward wheels of a wagon or carriage when its forward motion is retarded by the pole, the adjustable sway-bar being connected to and operated by the pole by means of connecting rods and levers; the whole combined and operating substantially in the manner and for the purpose herein set forth."

For the improvement in CLOVER-HULLING MACHINES; Martin H. Mansfield, Mifflintown, Pa., June 6th, 1846.

*Claim.*—"What I claim as my invention, and desire to secure by letters-patent, is the manner in which the projecting rubbers, (c, c,) in the concave (B,) and cylinder (A,) are combined and operate with each other, viz., their backs being broad, (either straight or wedge-shaped,) and their roughened sides tapering to a sharp edge at their fronts, are placed in the concave and on the cylinder, and in such a position that the front edges of the revolving rubbers on the cylinder will pass between the front sharp edges of the rubbers in the concave; the clover seed or rice being hulled by the action of the oblique side of the rotating rubbers while passing between the oblique sides of the stationary rubbers."

#### POTATO DISEASE.

Some persons have recommended cutting off the tops of potatoes to save the tubers from rotting. The theory is, that the disease first attacks the tops, and that by cutting them off, the disease is prevented from passing to the tubers. We cannot say how much soundness there is in this theory. So long as the tops remain healthy, we would by no means advise cutting them; but where the disease has already attacked the tops so as to disorder the sap, it seems reasonable the tubers can derive no further advantage from their connection with the tops, and it is not improbable that the separa-

tion, by preventing the flow of the disordered sap to the roots, may tend to prevent the decay of the latter.

A writer in the *Saturday Courier* mentions a case where a man mowed off the tops of his potatoes as soon as they showed symptoms of disease, and on digging them they proved sound. But it should be remembered that to have made the experiment decisive, alternate rows through the lot should have been cut and left standing. The difference, if any, in the condition of the tubers in the cut and uncut rows, would have shown the effect produced by cutting off the tops. As it was, however, it is questionable whether the soundness of the potatoes was attributable to cutting the tops. We could cite several cases where the tops were considerably attacked, and the growth of the potatoes evidently checked by the disease; but yet remained sound till harvested, and even kept quite well through the winter.

#### PRESERVATION OF SWEET POTATOES.

MR. TUCKER—I send you the following method of keeping sweet potatoes, which I have practised with complete success for several years, having now some large yams as sound as they were when dug.

Select a high dry spot, make a circular bed of six or seven feet in diameter, elevated a few inches above the surrounding earth by digging a trench 8 or 10 inches deep, and throwing the earth taken out of it on the bed; throw down a layer of dry pine straw, 7 or 8 inches thick; take the potatoes immediately from the patch as they are dug, and put them on the bed without being bruised, from 30 to 50 bushels in a bed.) Over them throw a layer of dry pine straw, 5 to 6 inches thick; over the straw a layer of pine bark pulled from dead or decaying logs, throw on earth to the depth of six inches, and on the whole make a slight shelter of pine boards. Leave a small hole at the top of the bark without earth, covered with a piece of pine bark, to let the steam escape. In April, take potatoes and remove them to a dry and cool room in the barn or other out house, and spread them over the floor, and you can eat them till June or July.

H. F. B.  
Kingston, N. C., 1846.

#### FATTENING CATTLE.

At a late meeting of the Newcastle (England,) Farmer's Club, an account of which we find in the *Agricultural Gazette*, Mr. GLOVER, the secretary, spoke of his mode of stall-feeding cattle. He said he was particular to have his cattle fed at stated times. The cattle, he said, "knew perfectly when meal time had arrived, and were restless and uneasy when disappointed of their food." He thought "cleanliness and a good supply of litter should never be neglected. To keep the skin clean, and use the currycomb liberally, tended to fatness." He remarked that the food should also be given with regularity as to quantity. "They should not be exposed to alternations of hunger and surfeit. The food of cattle should also be varied as much as possible. Like human beings they were fond of variety and capricious in their appetites. Two pounds of oil-cake, five pounds of barley-meal, and five pounds of hay chaff, with a plentiful allowance of Swedish turneps, had been recommended as a daily allowance."

He spoke of the use of linseed oil in feeding, which he said had been attended with much success. "The oil was sprinkled on good oat straw, layer after layer, at the rate of a gallon of oil to a week's allowance of straw. The straw to be frequently turned over, and kept two days before used: by which time the oil would be absorbed, and there would be a slight fermentation in the food." He described, also, the mode of making *Warnes's Compound*, which is highly esteemed for fattening cattle. "He put 166 lbs. water into a boiling cauldron, and when boiling, stirred into it for five minutes, 21 lbs. linseed meal. Then 63 lbs. of crushed barley was sprinkled upon the boiling mucilage, by one

person, while another rapidly stirred the mixture. This occupied another five minutes." It is then left to cool—if there is much fire it should be put out. It should be used the next day, or by being excluded from the air, may be kept longer. The quantity given to each bullock per day, is eight pounds, with hay or straw in addition.

#### THE KITCHEN GARDEN.

.....  
**MR. TUCKER**—Permit me through the medium of the Cultivator to call the attention of farmers more generally to the practice of using the *water-pot* in their gardens. The garden is generally too much neglected; this should not be so. The kitchen-garden is the source from which many of our delicacies of food are to be derived. It is an excuse urged by farmers in general, that they have "no time to spend in the garden," and allowing themselves to be governed by this idea, they seldom spend but very little time in them after their planting.

Now I would recommend to every farmer who pretends to have a garden, to spend more or less time every day in hoeing and watering it. This is the only way by which good and luxuriant crops of garden products can be obtained. The garden should be visited every day during drouths, with the *water-pot*. The best time for watering is immediately after sundown, as the water has a chance to soak into the earth before the morning sun comes up to bake or harden the soil. In watering, care should be taken not at any time to use cold water. Well water should not be used unless it has been drawn for a day. Soap-suds and the washings of barn yards are excellent fluids for watering.

Time spent in the garden is never lost. When your healthy-looking vines yield their rich delicacies, and the garden gives up its substantial and palatable eatables, then will you not grudge the time spent in it.

NICHOLAS.

Watertown, July 2d, 1846.

#### WOOL GROWING.

.....  
**MR. EDITOR**—Can you tell me what encouragement there is for a wool grower to strive hard to improve his flock, while the present feeling and policy of the manufacturers exist? For years the farmer has been deafened with the cry that wool is lower this, than last year; and now their agents talk of its being five or six cents less, and they must buy it at this reduction or not at all. I will venture, if a memorandum had been kept for a few years past, it would be found that by this time they would require a small premium to induce them to take it at nothing, if their assertions are to be believed. I would ask the manufacturers, if they believe this course just, even to their own interests? Can they expect the farmer to spend his time looking up fine crosses and paying \$20, \$30, or even \$50 for bucks to improve his flocks, if he is always to be met with the never failing cry of "wool is falling." Let me tell them that a silent change is fast going on; heavy-fleeced, middling wool, is fast superseding the really *fine*. Why, because no discrimination is made between the qualities, commensurate with the expense of producing the *fine*. Will they be wise in time for their own interest?

A WOOL GROWER.

**PRESERVING TIMBER.**—S. W. Jewett of Vermont, impregnated in 1834, a stick of basswood timber, (which decays more rapidly than nearly all other kinds of wood,) with a solution of blue vitriol; it was green, cut in June. It was partly buried in the ground, and exposed to constant alternations of moisture and dryness. In eleven years "it was, to all appearance, as sound as when first cut. The remaining portion of the tree, not impregnated, had decayed years before.

#### WEATHER PREDICTIONS.

.....  
 THE London *Gardeners' Chronicle* furnishes an extract from an article written by the celebrated astronomer, M. ARAGO, in which he states that he has "frequently been led to consider whether it will ever be possible, by means of astronomical calculations, to determine, a year in advance, what in any given place will be the annual temperature, that of each month, the quantity of rain, or the prevailing winds." The results of these investigations, he observes, "*demonstrate peremptorily that the lunar and cometary influences are scarcely sensible*; and therefore that weather prophecy can never be a branch of astronomy, properly so called. For, in fact, our satellite and the comets, have been in all times considered, in meteorology, as the preponderating stars." He protests "loudly" against those predictions which are yearly laid before the public in his name, and says: "No word has ever issued from my mouth, either in the intimacy of private conversation, or in my courses delivered during thirty years—no line has ever been published with my assent, which could authorise the attribution to me of an opinion, that it is possible, in the present state of our knowledge, to foretell with certainty what the weather will be a YEAR, a MONTH, a WEEK—nay, I will say, a SINGLE DAY, in advance."

Such, then, are the conclusions of the greatest astronomer of the age, in regard to *weather-prophecy*. What will our *weather-wise* (?) almanac makers say to them?

#### ROTTING HEMP.

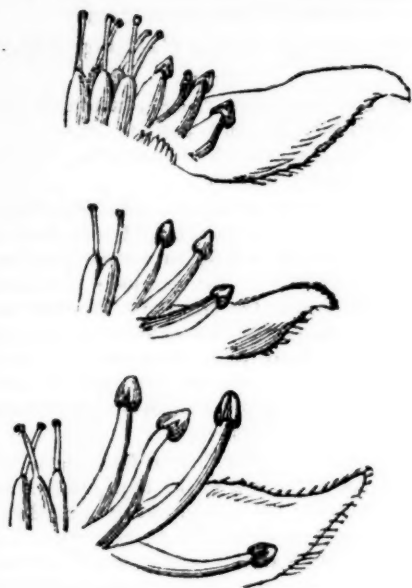
.....  
 THE Report of the Commissioner of Patents states, that important improvements have lately been made in the preparation of hemp and flax, particularly in the rotting process. Water-rotting, according to the old mode, occupied from five to fourteen days, and dew-rotting, from two to six or eight weeks. It is stated, that under the recent improvement, the whole process is gone through within "a day and a-half, or two days at furthest." In the old mode, the natural temperature of the air or water is relied upon; in the new mode, artificial heat is resorted to. The hemp or flax is put into large vats, and steeped in warm water, until it is completely macerated; and as soon as it is brought to this condition, the temperature is suddenly raised to the boiling point, which arrests all further rotting. The critical point in hemp-rotting, is to check the putrefactive process at the proper time, and where it depends on the temperature of the air, it requires great discernment to ascertain when the operation must be checked.

#### LOCALITIES FOR PEACH ORCHARDS.

.....  
 THERE is little doubt, that in many parts of the country, where the peach is not raised from the severity of the climate, a selection of locality would give regular crops. The great advantages derived from nearness to large unfreezing lakes, is well known. The superiority of hills over valleys, has often been noticed; the former being colder in summer, and favoring a more moderate and well ripened growth of wood, and being less subject to sharp frosts on clear nights.

A very striking case was lately mentioned to us by R. Raymond, of Conhocton, Steuben Co., New York. The river valley at that place, though many hundred feet above the level of the sea, is much lower than the surrounding country, being flanked by hills about 500 feet high. In the valley, the peach cannot be cultivated, he himself, as well as others, having had their trees killed completely to the ground in winter. But on one of the neighboring hills, 500 feet above, an orchard has been planted, where not only the trees themselves escape, but they yield regular crops of fruit. This hill is probably over 1,200 feet above the level of the sea. The experiment, both on the hill, and in the valley, were made on dry, firm soils.





THE STRAWBERRY—FERTILE AND BARREN FLOWERS.—Fig. 69.

It often happens, where accurate experiments take strongly opposite grounds in theory, that "both are right, and both are wrong." Three opinions appear to have been adopted relative to the character of the strawberry, or of certain highly improved varieties; one is, that there are staminate or barren plants, which are absolutely necessary to the fertilization of the pistillate ones; this opinion is held by N. Longworth and others of Cincinnati. A second opinion regards these staminate plants as wholly useless, and as cumberers of the ground, and should therefore be all rooted out; this is held by A. McIntosh of Cleveland. A third opinion, held by A. J. Downing, C. M. Hovey and others, is intermediate between the two others, and regards sterility, not as an essential, but as an induced character, and that, though some varieties may be increased in fruitfulness by the proximity of staminate plants, that the latter are not always essential to the perfection of the fruit.

The writer has lately made some microscopic examinations, with an achromatic instrument of the best construction, with a view to elicit light on the subject, the results of which may possibly be interesting to cultivators. Three varieties were selected,—Hovey's Seedling, usually but erroneously regarded as destitute of stamens, and as entirely pistillate; the Dundee, in which the stamens are small, but readily observed; and the large Early Scarlet, where the stamens are large, fully developed, and very conspicuous. The above figures represent magnified views of portions of the flowers of these three varieties. In Hovey's Seedling, the stamens, which, as in all other flowers of this natural order, adhere to the inner rim of the calyx, are so short, that they are entirely hid by the mass of longer pistils. They are evidently imperfect and flattened, partaking thus, in a slight degree, the character of the petals of a double flower. The figure represents a portion of the germs with their surmounting pistils on the left, and one of the sepals of the calyx with the adhering stamens, on the right. In the second figure, representing the Dundee, the stamens are much more perfect; and in the Early Scarlet, shown by the third figure, they are very large and distinct, and contrast strongly with the first.

To ascertain if the anthers of Hovey's Seedling possessed any fertilizing power, many careful observations were made with a compound achromatic microscope, with the best constructed sextuple object glasses. From some of the anthers, no pollen (or fertilizing dust) was obtained; they, however, usually afforded a very small quantity; and their fertilizing power appears to be slowly developed, as they burst and discharge the minute portions they contain, in most cases, about the time or after the petals have fallen. The anthers of the

Dundee, afforded pollen in much greater quantities; and the Early Scarlet yielded it in profuse abundance. It may be proper to remark, that from the comparative smallness of the stamens in the Dundee, it would be pronounced by a superficial observer, as pistillate only. The Early Scarlet was merely taken as a representative of several other varieties possessing perfect flowers, as the Elton, Ross Phoenix, and Alpines. The Duke of Kent was frequently found with as imperfect stamens as Hovey's, and again with as perfect flowers as any others.

A single experiment was tried, in cultivation, with Hovey's Seedling. A bed of this variety, twelve feet from a bed of the Early Scarlet, has, in most cases, perfect and well formed fruit. Single plants had been also placed at distances from the first bed, of five, nine, and twelve rods respectively; on all these equally, the fruit is very evidently more imperfect, most of the berries being only partially developed from imperfect fertilization, and but few fully formed and well filled to be found. These were all in a newly planted field, far away from any other strawberries. This experiment, so far as it goes, (with the microscopic examinations,) tends to show, that though Hovey's Seedling may sometimes fertilize itself, yet the process is greatly facilitated by nearness to other strongly staminate varieties; but to be more satisfactory, the flowers should have been covered with a gauze-covered frame, so as perfectly to exclude the bees. In the present instance, no bees were ever noticed on any of the flowers.

J. J. T.

#### MANUFACTURE OF AGRICULTURAL MACHINES.

THE *Rochester Democrat* notices Mr. JOHN A. PITTS' factory for the manufacture of various kinds of agricultural machinery. He has lately erected a new building, which, it is said, is three stories high, 120 feet long, 33 feet deep, with a rear 90 feet in length, the whole occupied with the various branches of the works, which are propelled by steam. Twenty-seven men are at present employed, and with the facilities afforded, are capable, it is said, of turning out \$30,000 worth of machinery in a year. The principal machines at present made here, are Pitt's threshing machine and separator, superior horse power, and Pitt's corn and cob mills.

These machines are well known and highly valued. We have several times spoken of them in the *Cultivator*, and we are glad to find that the demand for them is such, that the ingenious inventors, (Messrs. J. A. & H. A. PITTS,) are likely to be rewarded for the immense expense which we know they have incurred in bringing them to perfection. Some valuable improvements are said to have been added lately to the threshing-machine and separator. It is said to be capable of thrashing and cleaning for market, between four and five hundred bushels of grain per day.

#### WEEDS—HINT FOR THE SEASON.

A VERY common instance of neglect at this season of the year, and through the middle and latter part of summer, is the omission of the continued destruction of weeds. Corn, potatoes, ruta bagas, carrots, and other hoed crops, usually receive one or two good dressings with the hoe and cultivator early in the season, and are afterwards neglected. How many fields of corn, exhibit in autumn, when the crop is cut up and cleared off, a smooth clean surface, like a newly ploughed field, as they ought to? instead of which, we far more frequently see half a ton of luxuriant weeds to the acre.

The old saying is, "one year's seeding will make five year's weeding." But there is another reason why weeds should never be suffered to go to seed. The exhaustion caused by growing vegetables, which are destroyed on the surface, and not buried in the soil, every one knows; but the exhaustion produced by the *forma*

tion and ripening of seed, is not so well appreciated. It has been justly remarked, that it requires more strength of soil to form the half-ounce of seed on a single plant of the turnip, than to grow the large succulent bulb in the ground, though weighing fifteen pounds. Hence the great importance of never allowing a crop of weeds to draw the life from the soil in ripening a crop of seed.

The importance of cutting up and destroying weeds when only an inch high, before they have shaded and stunted the young crop, and when the work can be done with one tenth of the labor subsequently required, needs no reasoning to show its policy. The advantage of keeping the soil *entirely* free from the seeds of weeds, so that the necessary stirring of the surface may be entirely performed by the plough and cultivator, instead of by hand, is equally obvious.

#### INDIAN CORN.

M. W. Phillips, of Edwards' Depot, Miss., writes in the July Cultivator, a very practical article on the culture of Indian Corn. He is right when he says, corn will not *fire*, i. e. curl, in a garden, with deep tilth and good dressing, as in the field, where the roots are torn by deep culture. Experiment has convinced me, that so far as profit is concerned, there is no vegetable grown north of the tropics, that will yield the same quantum of food for man and beast, to the rod square, as Indian corn, particularly in a clay loam, well ameliorated by coarse manure. Six square rods of corn, planted four inches apart, in drills three feet apart, will, after the middle of June, this year, furnish a daily baiting of stalks or suckers to a cow, until the corn is ripe, when the remaining stalks will be still more nutritious, if cut as soon as the corn is hard. When thinned out to about eight inches apart in the drills, each stalk left will produce from one to two ears. The richer the soil, the less the necessity of hoeing, as it then contains an atmosphere of its own, which needs little aid from tillage, after the first hoeing. S. W.

#### LABELS FOR FRUIT TREES.

At page 382 of the Cultivator for 1844, is a description of a zinc label for fruit trees, with directions for making the ink to write on them; thinking this the most desirable and economical plan I had seen, I, with a neighbor, made some of the labels as per direction; but we found that the writing, on exposure to the air, turned quite white, leaving the form of the letters, but becoming nearly unintelligible. This was owing, as we suppose, to the oxidization of the zinc; but we found, that the spreading a coat of copal varnish over the label, when the ink was dry, prevented the oxidization, and the writing preserved its fine jet black color. Gum shellac, dissolved in alcohol, spread on in the same way, will preserve the name, but it becomes somewhat yellow. Varnish makes the best coat, i. e., it preserves the glossy black of the ink best. We prepare the labels as there directed, and after the writing is dry, spread on one coat of varnish with a small brush, and the work is done. If this ink proves durable, (and it cannot be washed out,) this is the best way to label trees I have seen. A label need not cost more than the fifth of a cent, including the copper wire, when made by the quantity, and it must last a great many years. Every lover of fruit and fruit trees will provide himself with so important a thing as a correct list of his valuable trees, when it can be done so easily. H. Ohio, 1846.

CARROTS.—S. Brown, in the Boston Cultivator, says, "We have fed two farrow cows with carrots from the time of housing to the present date, and the result is, they have given nearly twice the quantity of milk they would have produced without them, and of a richer quality; the butter made from them, churns quick, and is nearly equal to June butter."

#### FACTS AND OPINIONS

Condensed from various Exchange Papers.

.....

SAW-DUST ROUND FRUIT TREES, has been found eminently useful in keeping the ground moist in drouth, and in promoting the growth of the tree. Several bushels may be applied to a tree.

THE BORER IN APPLE TREES.—W. Buckminster, at an agricultural meeting at the State House, Boston, stated that the borer, which is a fly in its perfect state, lays ten eggs on the tree near the ground; that they hatch to young worms and enter the bark the first year; the next, they eat into the wood and ascend; and the third, come out and change to the perfect insect. He says the best remedy is to wash the trees with strong lye in July, after the eggs are laid, and before the worms have buried themselves in the bark.

ROOTS FOR COWS.—The Boston Cultivator says, that the disagreeable flavor of milk, and offensive odor in cellars, from the ruta бага, may be obviated by substituting the cabbage turnep, or turnep-rooted-cabbage, *below* ground; that it will yield as much or more than the ruta бага, keeps well, imparts no unpleasant flavor to milk, and like a parsnep will keep well in the ground the severest winters, and be ready for use in the spring. The turnep-rooted-cabbage, *above* ground, is less valuable.

ONIONS—PRESSING THE EARTH.—A correspondent of the Michigan Farmer, says an onion bed was made on a very mellow soil of gravelly loam spaded eleven inches deep. One half of the bed was trodden by the feet of a boy; the other half untouched. The bed was merely weeded. The onions which grew on the *trod-den* part, "came up first, grew more thriftily, and were more than double in size and quantity those on the other half—being as good a yield as I ever saw."

RESPONSIBILITY OF NURSERYMEN.—An action was lately brought, in New-Jersey, against a nurseryman for having sold trees, a great number of which, on fruiting were found to produce *natural fruit*. The Judge ruled that the plaintiff could only recover the first cost of the trees,—and that the cost and labor in cultivating worthless trees, the rent of the land on which they grew, the loss of several years' time, and the loss of sale of many bushels of fruit, were not to be taken into account. The jury decided accordingly.

FRUIT TREES.—At a late meeting in Boston, John Owen of Cambridge, stated he cured the black wart on plum trees by cutting off and washing in salt water; and in another case, by washing with salt water only, the warts cracking off. S. Pond learned the value of salt for plum trees, by an inundation covering his grounds several feet with salt water, "killing every thing but his plum trees, and giving them new life, health, and vigor." Dr. Shurtliff, of Brooklyn, applied to unhealthy, unproductive plum trees, two quarts of salt each, in water; "the trees became healthy, and the ensuing season they bore too much fruit." He continued the application, and was not troubled with black wart nor curculio.

W. Buckminster said he had found roots of apple trees three rods from the trunk, that had been set out only sixteen years—a proof of the importance of a wide, deep bed of fertile soil.

YOUNG LAMBS.—J. A. Morton, of Hadley, Mass., treats young lambs which have been chilled, by immersing them in a tub of warm water, the temperature a little higher than blood heat, rubbing them and keeping them in long enough to become warmed through. He then takes them out and rubs them gently with flannel till quite dry. He does not feed them, till by running about and exercise, a keen appetite is created.

PROTECTING TREES FROM MICE.—A correspondent of the Gardener's Chronicle, mixes soot and milk till of the consistence of thick paint, and then applies it to the trees with a brush. This, applied once a year, he finds effectual protection against hares and rabbits. Would it not be equally so against mice?



**DURABILITY OF TIMBER.**—J. Townsend of Zanesville, in a communication to the New-England Farmer, speaking of the diversity of opinion relative to the best time for cutting timber, very justly remarks, that much less depends on the *season of cutting*, than on the treatment it receives *after it is cut*. For instance: a tree is cut perfectly green and full of sap; it is suffered to lie in large logs, with no chance of seasoning—the sap ferments, and the log partially decays. Another portion of the tree is, immediately after cutting, sawed into thin boards, which season in a few days, and the whole becomes dry and “tough and hard like horn.” Hence, the influence of summer heat, in causing a more rapid evaporation and drying, under favorable circumstances therefor, and in promoting also a more rapid fermentation under other circumstances; the advantage of a season when the bark may be *peeled* to assist in drying, and its disadvantages when the bark is *not* peeled, by increasing decay, should all be taken into account.

**PRUNING APPLE TREES.**—A correspondent of the Boston Cultivator notices an objection to early summer pruning, generally overlooked. The newly forming wood and bark is then in an unusually tender state, and the weight of a ladder or of the feet on a branch, easily separates the bark, and seriously bruises and injures the tree.

**CARROTS—ROTATION.**—At one of the Boston Agricultural meetings, — Gleason, of Wayland, stated that he had raised 800 bushels of carrots to the acre; on the same ground the year following, he had only 525 bushels. The ground was manured both years. The importance of alternation or rotation is here evident.

He found carrots to be the best of all roots; his cows fed on them in winter, yielded him *as much profit as in summer*. Eight hundred bushels to the acre were equal to sixteen tons—they were worth to him eight dollars per ton, or equal to \$128 per acre. The tops were worth \$5 per acre to feed swine in autumn.

**DURABLE SHINGLES.**—The durability of pine stumps is well known. S. W. Jewett says, in the Boston Cultivator, “There are house roofs of large buildings in this vicinity that are covered with shingles from the butt ends of pine trees more than forty years ago, that remain sound and good at present.”

**PEARS.**—J. M. Earle of Worcester, states, that a seedling pear tree, growing in a pasture, was pruned and grafted with the Bartlett, and produced pears enough the third year to sell for *eight dollars*.

#### INQUIRIES.

.....

**PEACHES.**—G. S. P., (Randolph, Vt.) We do not believe there is a “rare ripe,” or any other peach, the seed of which will produce fruit “always like the original.”

**WIND POWER.**—A SUBSCRIBER. We should suppose the “Centrifugal Wind-wheel,” described in our last, would answer your purpose better than anything else we have seen.

**MALAY FOWLS.**—T. H. A., (Canton, Ct.) Some of the fowls called Malay, have feathers (as you describe) on the legs down to the feet. Their colors vary from dull yellow to black. The largest of them stand in the first rank as to size.

**CARROT SEED.**—S. S. G. The carrot seed you speak of as being two years old, we suppose will be a year older before you can sow it, as it is now too late for this season—hence you had better buy new seed than to use it. It will vegetate some at two years old, but not as well as during the first year.

**SEED PLANTER.**—R. A. B., (Macon, Ga.) asks, “Haven’t you an implement for planting seeds? one that makes the furrow, drops the seed, and covers it, at one operation? If so, will it plant seeds of all sizes, and corn, peas, &c.?” LEWIS’ seed planter answers all these requisitions admirably. Those who have tried it speak of it as the best they have seen. The price is \$15.

## THE CULTIVATOR.

ALBANY, AUGUST, 1846.

#### TO CORRESPONDENTS.

COMMUNICATIONS have been received, since our last, from S. W. Jewett, a Subscriber. G. S. Paine, Chas. N. Ryan, Thomas H. Austin, Storrs Barrows, a Wool Grower, Wm. J. Eyer, Heber Van Volkenburgh, J. L. H., Herman Wendell, Nicholas, Levi Disbrow, Jason Smith, an Old Subscriber, W., S. W., John Keese, Ebenezer Bridge, S. S. G., X., P., H. L. Sheldon, and H. P. Byram.

BOOKS, PAPERS, &c., have been received as follows: The American Journal of Science and Arts, conducted by Prof. Silliman and others. New-Haven, Ct.—\$5 per year.

The American Journal of Insanity, edited by the Officers of the N. Y. State Lunatic Asylum. Utica.—Quarterly; \$1 a year.

The Cayuga Tocsin, from Maj. J. B. Dill.

Premium Lists of the New-Haven (Ct.) Horticultural Society, of the Fairfield (Ct.) Agricultural Society, and of the Hartford Co., Ct., Ag. Society.

The Farmers’ Library, Vol. I., neatly bound, forming a beautiful octavo volume of 664 octavo pages, and embracing Petzholdt’s Lectures to Farmers on Agricultural Chemistry, and Thar’s Principles of Agriculture; also, the Monthly Journal of Agriculture, vol. I., complete, by J. S. Skinner, and bound in uniform style with the Library. From the publishers, Greely & McElrath, New York.

Speech of Hon. E. B. Holmes, in the House of Representatives, on the Mexican War, from Mr. H.

Prize List of the New Haven (Ct.) Agricultural Society for 1846.—Exhibition to be held at Birmingham, Oct. 1st. From L. Durand.

Lardner’s Popular Lectures on Science and Art, part 14. This part completes the work, forming two beautiful volumes of about 600 pages each.—Price \$4.50.

Prize Lists of the Otsego and Oneida Agricultural Societies for this year. The Otsego Fair is to be held at Cooperstown, Oct. 1, 2; that of Oneida, at Whites-town, Sept. 24, 25.

S. W.—The paper was disposed of as requested.

N. C.—We know of no opportunity to dispose of the animal you speak of in this vicinity.

L. F. PAYSON—Should like to hear from you.

#### MONTHLY NOTICES.

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☞ In Mr. JEWETT’S article on “Improved Flint Wheat,” in this number, the variety should have been described as a *bald wheat*, with a few short beards in the upper end of the head.

☞ In the article on “Principles of Breeding” in this number, the No. 1591 is applied to the bull, Red Comet, by mistake—that number belongs to *Wye Co-net*, as he is registered in the Herd-Book.

CROPS IN CONNECTICUT.—Extract from a letter from H. WATSON, Esq., dated East Windsor Hill, July 21st:—“My tobacco crops look well. Our wheat crop is a good one—it succeeds better after tobacco than after any other crop; and we have *proved* here, that tobacco does not exhaust the land as much as corn, for on land every way manured and cultivated alike, a much greater crop of wheat is obtained from the tobacco land than from the corn land, in the same field, and side by side.”

CROPS ON LONG ISLAND.—Extract from a letter from ALBERT G. CARL, Esq., dated Queen’s Co., July 16th, 1846. “Our wheat and rye is all in sheaf or stack, and is a fine crop. We are yet in the midst of hay,

and that too is a heavy crop. Although the drought of last season injured the roots of grass considerably, yet the fine season of this year has made it more than an average. It was noticed early in the spring, that there was much sorrel in fields, more than usual; was it caused by the absence of grass roots, killed by the dry weather of last year?

"Oats are very large, and promise to be a great yield; they are getting ripe, and will, in a day or two, need to be cut. The weather was wet for some two weeks in June, and the first one of July, so that we could not commence haying as soon as usual or desirable, and have had busy times since. Corn, perhaps, never looked better; it is very forward, and in a most growing state, just setting for ears; there are no poor fields of it to be seen. Buckwheat is sown, and has a good start.

"So far, our farmers do not complain of any crops. The rot in the potato has commenced in fields of those planted early, and we fear will be extensive. There is a fine prospect for fruit, but the wet weather caused the cherry to rot on the trees. They were very abundant."

**CROPS IN GEORGIA.**—Extract from a letter received from R. A. BENSON, Esq., of Macon, Ga.: "The crops are very promising. More wheat has been made this year in this state than ever before: fully double what has been made in any previous year."

**CROPS IN GENERAL.**—*Grass* has generally been over an average crop. In some few cases it has not done much better than last year, but accounts from all directions, with a few exceptions, speak of the crop as being unusually good. *Rye* has given a good yield, and the grain is generally plump and of good quality. *Oats* have not yet (July 22,) been harvested, but the crop looks heavy. In some instances the growth of straw is so rank that it has somewhat fallen down, but we have not seen many cases where the crop appears to be suffering on this account. *Barley*, so far as we have seen, is promising. *Wheat*, taking the whole country together, we venture to say is unusually abundant. It is true, the Hessian fly has committed damage in some districts, but their ravages are quite limited, and from the great west and the far south, we have the unanimous statement of a bountiful harvest. *Indian Corn* is generally promising. Accounts from the south inform us that it never looked better. We have seen a few fields which have been almost entirely destroyed by the wire-worm. This insect has prevailed in uncommon numbers in some neighborhoods and on some kinds of soil, during this season and the last. *Oats* and *barley*, as well as old meadows, in some cases have been greatly injured by them. For *Potatoes*, the season may be said to have been so far rather favorable. They have not suffered with drouth, as has been the case for the two previous years. But the final condition of the crop cannot yet be ascertained. The malady which for several years has so seriously affected it, may yet make its appearance. Indeed we have already seen its "premonitory symptoms" in a few instances, and have been informed that on Long-Island and in some parts of New-Jersey, the tubers have even now began to rot. A few days more will probably show with some certainty what we may expect in the case.

✂ We saw lately some very superior DORKING FOWLS, and some RABBITS of extraordinary size, which had just arrived from England, and were on their way to the country seat of FRIS. ROTCH, Esq., at Butternuts, Otsego county. The rabbits weigh, it is said, when full grown, from 14 to 16 lbs. each, dressed, and are highly esteemed for the quality of their flesh. We are pleased to learn, that Mr. R., with his family, have returned to this country, after an absence of several years in Europe.

**HEREFORD CATTLE FOR VERMONT.**—Rev. L. G. BINGHAM, of Williston, Vt., has lately purchased of Messrs. CORNING & SOTHAM, some fine Hereford cattle. The lot consisted of the imported cow, *Aston Beauty*, two yearling heifers, a yearling bull, and heifer calf. They are animals of excellent qualities, and, we think, will prove particularly valuable to that section of

country. Their vigorous constitutions will adopt them to the climate; and on the sweet pastures of the hills and mountains, they will easily and quickly thrive and fatten, while in any fair trials in the yoke, or for the production of butter, they will not be "found wanting."

**DURHAM OATTLE.**—Among our advertisements will be found that of PAOLI LATHROP, Esq., of South Hadley, Mass., offering for sale his herd of Durham cattle. We have seen some good animals belonging to Mr. L., and we believe the herd is generally reputed one of the best in the country.

**FINE CHERRIES.**—We were presented, the first of last month, with some very superior cherries, from the garden of Messrs. McCULLOCH & KIRTLAND, of Greenbush. We think they were of the variety described by Mr. DOWNING as the *Bigarreau*, though they had been procured under the name of *White Tartarian*. Their size was greater than any we have before seen, and their flavor and appearance corresponds with Mr. DOWNING's description, as follows: "Flesh pale yellow, quite firm, juicy, with a rich, sweet, and delicious flavor if allowed fully to ripen. In perfection the last of June."

**MR. NORTON'S ANALYSIS OF OATS.**—Some months since we noticed the fact, that the Highland Society of Scotland had awarded a premium of fifty sovereigns to our fellow-countryman Mr. JOHN P. NORTON, for a chemical inquiry into the nature and composition of the oat. The society's journal for July, contains Mr. NORTON's report on this subject. The late period at which it was received precludes a lengthened notice at this time, but we shall endeavor to present an abstract of it in our next.

✂ The EARLY POTATOES advertised by E. COMSTOCK & Co., are of the kind we have before spoken of in several instances. We deem them the most valuable early variety we have ever known. Their growth is remarkably rapid—making a strong, healthy vine—and the tuber is decidedly more farinaceous and palatable than any other kind known to us which ripens so early. We had them on our table of fine size and quality this season, the 25th of June.

**GENESEE AGRICULTURAL SCHOOL.**—We are well pleased to learn that this institution has been patronised so far to an extent even greater than was anticipated. General HARMON, who, it will probably be recollected, is associated with Dr. LEE in the management of this school, writes as follows to a gentleman of this city:—"We have had as many boys at our agricultural school as we could accommodate. I have added a few more rooms, which have made accommodations for ten more."

**HAY-SPREADING MACHINE.**—We are obliged to our correspondent, C. B., for his suggestions in regard to this implement; but if he will turn to our last volume, page 190, he will find a cut and description of one which we think gives a correct idea of its construction and uses.

**NATIONAL FAIR.**—ADRIAN BERGFN, of New Utrecht, L. I., writes; "In attending the National Fair at Washington, I was much gratified to witness the improvements our country has gained within a few years, in manufactures, and in improvements of all kinds: and if our nation remains prosperous, we shall still continue to advance, only let our young men labor with their own hands, and not think it beneath their dignity."

**CORN AND COB MEAL.**—SAMUEL TEAGUE, near Dayton, Ohio, informs us that he fattened his hogs last fall, on corn-and-cob meal made into mush by steam, and that he intends feeding about one hundred hogs in the same way the present season. He thinks he saved one-half of the grain by this mode. We are fully of the opinion that the saving by cooking meal for hogs is very great. As to the use of the cobs, we have not had the opportunity of testing them very thoroughly, but incline to the belief, that where the meal is thoroughly cooked, they would be of less value, particu-



larly for hogs. We suppose, however, that cattle, and perhaps hogs, may obtain some nourishment from cobs, when properly prepared, but we suppose the chief value of cobs consists in rendering the meal more light and bulky, when they are worked up with the grain, by which the meal is more thoroughly acted on by the juices of the stomach, and consequently more perfectly digested.

**MULTICOLE RYE.**—Messrs. McCulloch & Kirtland, of Greenbush, have raised a small lot of this kind of grain the present season, being the first we have ever seen growing. The crop had the appearance of being decidedly the heaviest which has ever come under our notice, though the soil from its compact and rather cold nature, did not seem to be very well adapted to the production of rye. A portion, only, of the crop has yet been got out, but we have no doubt that when the yield shall have been ascertained, it will be found an extraordinary one. By reference to our advertising columns, it will be seen that E. Comstock & Co. have this kind of grain for sale.

**SAMPLES OF WOOL.**—The great number of letters we receive, enclosing samples of wool, precludes the possibility of noticing them at length. We have some very fine samples from Messrs. Perkins & Brown, of Akron, Ohio, showing the condition in which, (as it is stated) they always put their wool for market. It is most beautifully clean, and we should be pleased to learn the particular manner in which it was prepared. Messrs. P. & B. state, that "such wool, in similar condition, has been worth in cash, at Lowell, Northampton, and Webster, Mass., an average of full 70 cents per pound, for the last ten years." The samples sent are said to be from fleeces "each and every one of which weighed from 3½ to 3¾ lbs."

We have also received samples of wool from the flocks of Ebenezer Bridge, Pomfret, Vt., and B. H. Streeter, Berlin, N. Y., who have no doubt good sheep.

#### CONDENSED CORRESPONDENCE.

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##### PROFIT OF HENS.

J. H. Austin, Canton, Ct., sends us an account of the profits of keeping fifteen hens for the year 1845. He fed them a quart of corn per day, and "occasionally a few boiled potatoes; also kept a supply of clam and oyster-shells pounded for them to eat. He charges the corn at 75 cents per bushel. The profits, according to his statement, are shown by the following summary:—

|  |         |
|--|---------|
| Sold 102 dozen eggs at 12½ cents,..... | \$12.75 |
| 30 dozen, family use, &c.,.....        | 3.75    |
| 75 chickens at 1s. each, .....         | 12.50   |

\$29.00

Deduct expenses and trouble,..... 9.00

Nett amount,.....\$20.00

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##### BORING FOR WATER.

In answer to the inquiry of C. Bryant, Esq., in the April number of the Cultivator, Mr. Levi Disbrow, writes us that there would be no difficulty in obtaining water by boring in the situation described, providing it is undertaken by those who "understand it," and for those who are "able to foot the bills." He says, "it will prove valuable in towns and among wealthy people, but not in other situations." Mr. Disbrow has been many years engaged in boring for water; he was in fact, we believe, the first to bring that mode of obtaining water particularly into notice in this country. He states that he was the first to adopt the mode of *tight tubing*. He states that the boring at the large brewery in this city, which belonged to the late firm of Boyd & McCulloch, was done by him; that he there used for the first time, a tube to follow as fast as the boring was done, previous to which there is no accounts of any thing of the kind being used in Artesian wells. He states, that the tight tubing is the only mode by which a well can

be sunk through quick-sands, or where it is necessary to shut off fresh water from salt, or salt from fresh, as is the case at Syracuse and Salina, and in cities and towns along the seacoast. Mr. Disbrow is at present engaged in boring for water at Little Sodus, Wayne county, and would be glad to hear further from Mr. Bryant.

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##### MUCK AS A FERTILIZER.

Mr. Storrs Barrows, of South Trenton, N. Y., thinks our correspondent at Castleton, Vt., is wrong in the statement that muck "in its crude state is almost valueless as a manure." (See June No. p. 192.) After having used it in various ways, Mr. B. says he is decidedly in favor of hauling it from the swamp in the autumn, and spreading it evenly over the meadow. He thinks the "extra expense of composting with barn-yard dung is not sufficient to warrant the practice."

We have often remarked that there is a great difference in the value of "muck" as manure. Its composition is various. That which has assumed the form of *peat*, usually requires a process of preparation to fit it to nourish plants. It is frequently formed in a great degree of mosses, which in the course of time, have grown and perished—each succeeding crop increasing by its decay the accumulation of the mass. Peat usually contains in a greater or less proportion substances which are prejudicial to vegetation, particularly tannin and gallic acid, and it is necessary that these should be driven away, or rendered harmless, before the peat can yield its fertilizing properties to vegetation. On the other hand, the muck which is formed by the decay of the leaves of trees, (especially those of hard wood,) mixed, as is often the case, with the wash of surrounding lands, is a different substance, does not contain the acids just mentioned, or only in a slight degree, and is at once capable of nourishing crops.

#### NEW PUBLICATIONS.

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**FARMER'S LIBRARY AND MONTHLY JOURNAL.**—This work was commenced in the city of New-York, in July, 1845. It is issued monthly, each number containing about one hundred pages. The design is to afford a Journal of Agriculture, and also to republish standard foreign works. The first half of each number is therefore devoted to the latter purpose, and the other part to miscellaneous agricultural intelligence. But we have so often spoken of the FARMER'S LIBRARY before, that there seems not now to be any necessity of describing it in detail. We have just received the entire work for the first year, consisting of two beautifully printed and substantially bound octavo volumes of 550 pages each. Of the republished works, we have PETZOLDT'S AGRICULTURAL CHEMISTRY and THAER'S PRINCIPLES OF AGRICULTURE, which comprise one volume of the LIBRARY. The JOURNAL OF AGRICULTURE consists of original contributions from eminent practical farmers of this country, with similar communications from Europe, prize essays on various subjects, written in this and other countries, and numerous articles from the pen of the spirited and classical Editor, with notices of eminent patrons and improvers of agriculture, accompanied by well executed portraits and biographical sketches. Among others, we are presented in the first volume with the portrait of the late Hon. STEPHEN VAN RENSSELAER, of this city, and that of Judge RICHARD PETERS, of Pennsylvania. It is announced that a portrait on steel of the late JAMES WADSWORTH, Esq., of Genesee, is ready and will shortly appear in the current volume. The work is interspersed with other engravings and wood-cuts, illustrative of various subjects connected with its design; such as improved implements, plans for farm-buildings, animals, &c. The work is "got up" in the very best style in every respect, and is afforded at a very moderate price—the two volumes we have described, being sold at only \$2.50 each. It is edited by that veteran in agricultural literature, JOHN S. SKINNER, Esq., and published by GREELY & McELRATH, Tribune Buildings, New-York.

☞ The first number of the FARMER'S LIBRARY for

the second volume is before us. It commences with the republication of STEPHEN'S BOOK OF THE FARM, an elaborate work, originally published in Scotland, and which has been highly commended in that country and England. The republication will be continued till the work is finished. The JOURNAL department will be conducted as heretofore. We invite the attention of the public to this work. \$5 per year.

AMERICAN JOURNAL OF SCIENCE AND ART.—The July number of this capital work is received. Among the contents, which are varied and valuable, we have read with interest the articles on the Ethnography and Archæology of the American Aborigines, by S. G. MORTON; on the Evidence of Fossil Footprints of a Quadruped allied to the Cheirotherium, in the Coal Strata of Pennsylvania, by CHAS. LYELL, Esq.; on the Physical Structure of Plants, by Dr. D. P. GARDNER; Facts relating to the Great Lakes, by Prof. C. DEWEY, &c. We have also been interested by a communication on the Zeuglodon Remains of Alabama, by S. B. BUCKLEY. As it had been conclusively proved that the bones of the Zeuglodon, which Mr. Koch exhibited in New-York and elsewhere, under the name of *Hydrarchos*, belonged to different individuals, some might be induced to doubt whether the skeleton of the Zeuglodon which Mr. BUCKLEY obtained in Alabama, now in possession of Prof. EMMONS of this city, really belonged to one animal. Mr. BUCKLEY's communication is directed chiefly to this point, in reference to which he gives a detailed and authentic account of the manner in which this skeleton was procured, clearly proving that all the bones belonged to one individual. The Journal is published by Messrs. SILLIMAN & DANA, at New-Haven, on the first day of every second month—\$5 per year.

DOCTOR LARDNER'S LECTURES.—We have received the Fourteenth Number, which completes the series, and contains the title-pages, indexes, &c., for both volumes. The publishers state that the complete series are now printed in two large octavo volumes, and neatly and substantially bound in muslin and sold at \$4.50. We do not know how so much valuable knowledge can be purchased in any other way at so cheap a rate. Published by GREELY & McELRATH, Tribune Buildings, New-York.

THE SON OF TEMPERANCE AND RECHABITE.—This is a work just commenced in this city, devoted to the promotion of temperance under the auspices of the Orders of the Sons of Temperance and Rechabites. The first number makes a very pretty appearance, forming a magazine of forty pages, octavo. It is to be issued monthly, at \$1 per year. Edited by J. STANLEY SMITH, (late editor of the Albany Citizen,) and published by JOHN TANNER. As an instrument of good, we wish the work success.

#### FOREIGN.

WE have, by the Cambria, our English and Scotch papers to the 1st of July. The new Corn and Tariff bills passed the House of Lords, and became a law on the 25th of June. Shortly after this event, Sir ROBERT PEEL tendered his resignation to the Queen, which was accepted. Lord JOHN RUSSELL has been appointed in his place, and has formed a cabinet, which have assumed the duties of the government. The prospect is highly flattering for an early and abundant harvest. The season had been uncommonly warm, with timely rains, and all crops have flourished well. There is, as yet, little or no complaint of the potato disease either in Great Britain or Ireland. Flour and grain is abundant in the English markets, and was being rapidly released from bond, under the nominal duty of four shillings per quarter. Cotton had slightly advanced in price. American provisions were plenty in the principal ports.

A paper of later date, received by the Great Britain, speaks of the decline in prices of breadstuffs as follows: "We noticed in our last the immense quantities of flour and wheat which had been released from bond when the

new act came into operation. Flour, in consequence, has declined to the extent of 6s. a barrel, and wheat nearly 10s. a quarter. Every one anticipated a serious reduction, but the fall has fully equalled the worst apprehensions of importers. Every day brings vessels from Canada and the U. States, laden with flour, which has been shipped in anticipation of better prices, the fall of which, on the eve of a prolific harvest, will prove quite as injurious to the British farmer as to the American exporter."

#### PRICES OF AGRICULTURAL PRODUCTS.

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New-York, July 22, 1846.

COTTON—New Orleans and Alabama per lb., 7½a10c.—Florida, 7½a9½—Upland, 7a9 cts.  
BUTTER—Prime, per lb., 16a18c.—Common, 6a7.  
CHEESE—Per lb., 6a7c.  
FLOUR—Genesee, per bbl., \$4.12½a\$4.18½—Michigan, and Ohio, \$4a\$4.06.  
GRAIN—Wheat per bushel, \$2a86 c.—Rye, 62½a64 c.—Corn, Northern, 53a53½c.—Barley, 45.—Oats, 35  
HEMP—Russia, clean, per ton, \$215a\$225—American water-rotted, \$130a\$180.  
HAMS—Smoked, per lb., 5½a7 cts.  
BEEF—Mess, per bbl., \$6.50a\$7.  
LARD—Per lb. 5½a6c.  
PORK—Mess, per bbl., \$9.56½—prime, \$7.87.  
TOBACCO—Connecticut seed leaf, per lb, 3¼a8½.  
WOOL—(Boston prices.) July 18:  
Prime or Saxon fleeces, washed per lb. .... 38a40 cts.  
American full blood fleeces, ..... 31a35 "  
" three-fourths blood fleeces, ..... 28a31 "  
" half blood do ..... 25a28 "  
" one-fourth blood and common, .... 21a24 "

CATTLE MARKET—Brighton, July 20 —At market, 465 beef cattle, 10 yokes working oxen, 40 cows and calves, 2250 sheep, and swine none at market. Beef cattle, extra \$6, first quality, \$5.50, second do. \$5, third do. from \$4 to 4.75. Working oxen—Sales were made at \$2, \$78, \$85 and \$102. Cows and calves—Sales at \$23, \$26, \$29, \$34 and \$42.50. Sheep—Dull sales of lots at \$1.25, \$1.37, \$1.60, \$1.75 and \$2.63. No swine in market.

N. B Cattle very poor in quality at market to-day, but most of them sold—say 50 head left over.

#### PRINCE'S PREMIUM STRAWBERRIES.

William R. Prince & Co., Flushing.

HAVING devoted great attention to this Fruit, now offer the most estimable collection existing in America or Europe, embracing all the choicest varieties recommended by the London Horticultural Society, and the most estimable of other countries, including several splendid seedlings, originated by themselves and others. The sexuality of every variety has been investigated, and such plants and directions will be furnished as will insure abundant crops. There is no such thing as strawberries becoming barren when properly managed; they can be transplanted from August to November.

Primordian, the finest and most productive early crimson variety, large, profuse bearer, one of our seedlings, and now first offered, \$3 per dozen.

Large Early Scarlet, \$1 per 100.

Garnetstone Scarlet, \$1 for 25, and \$2 per 100.

Crimson Pine, large, fine, and prolific, another of our new seedlings, \$2 per doz. and \$3 for 25.

Crimson Cone, one of the most splendid, large, bright crimson, high flavor, profuse bearer, unrivalled, \$3 for 50, and \$5 per 100.

Prince Albert, (true sort.) Coul Late Scarlet, Iowa, and Willay, \$1 per dozen, and \$2 per 50.

Alice Maude, Deptford Pine, Corse's Seedling, Boston Pine, and Buist's Prize, \$1 50 per dozen.

President and Clara Victoria, \$3 for six.

Swainstone, Black Roseberry, and Victoria, \$1 for 25, and \$2 per 100.

British Queen, Myatt's Eliza, Myatt's Pine, Elton, and Old Pine, all fine flavor, but poor bearers, \$1 for 25, and \$2 to \$3 per 100.

Hovey's Seedling, Bishop's Orange, Ross Phoenix or Keen's Seedling, and Roseberry, 50 cents for 25, and \$1.50 per 100.

Dundee, Hudson's Bay, and Methven, \$1 per 100.

Royal Scarlet, Old Scarlet, Melon, and Downton, moderate bearers, 50 cts. for 25, and \$1 per 100.

Hudson, (of Cincinnati,) great bearer, \$1 for 25, and 2.50 per 100.

Prolific, Large Flat, and Green Hautbois, \$1 for 25, and \$2 per 100.

White and Red Running Alpine Everbearing, \$1 for 50, and White and Red Bush, do., \$1 for 25.

Common English Red Wood, (erroneously called Stoddard's Washington Alpine,) \$1 per 100.

English White wood, \$1 per 100.

Very large quantities at a reduction. Orders not less than \$5, (cash enclosed,) will meet prompt attention.

N. B.—All orders must be sent direct to us, and no plants are from us unless our printed bill and signature accompany them.

Flushing, Aug. 1, 1846—21.



## MULTICOLE RYE.

THE subscribers will be prepared to fill orders for the Multicole Rye, to a small amount, for sowing this autumn. This Rye has thus far produced abundantly, and promises to be a valuable variety. It requires no more than three pecks of seed per acre, and is highly recommended to those who wish to sow for soiling, as it grows very rapidly, and may be cut early in the spring.

E. COMSTOCK & Co.,  
Albany Ag. Warehouse.

August 1.

## DURHAM CATTLE FOR SALE.

THE subscriber being about to make new arrangements in his business, offers for sale his entire stock of thorough bred Durham Cattle, (25 in number,) of unquestioned pedigree, for which see American Herd Book. This herd has been selected and bred with great care, and with particular reference to their dairy properties. They have descended from the most celebrated herds in England, and are unquestionably one of the most valuable in this country. Any inquiries by mail promptly answered by the subscriber.

PAOLI LATHROP.

South Hadley Falls, Mass., Aug. 1, 1846.—2t.

## STRAWBERRY PLANTS.

THE subscriber has for sale, at his garden in Albany, the following kinds of strawberries, viz: Elton Pine, Iowa, Myatt's Eliza, Princess Royal, Stoddard's New Seedling Alpine, Victoria, Swainstone's Seedling, and British Queen; all rare and highly esteemed varieties, at fifty cents per dozen, or twelve dozen for \$5, packing included. Also Bishop's Orange and Early Scarlet, at \$1 per hundred; Ross' Phoenix and Hovey's Seedling, at \$2 per hundred.

AMES WILSON.

Albany, Aug. 1—1t.

## FRUIT TREES, ORNAMENTAL TREES, SHRUBS, PLANTS, &amp;c.

THE subscribers have in progress arrangements for furnishing hereafter every description of Fruit and Ornamental Trees, &c., which, when completed, will enable them to forward to their customers in all parts of the country, every variety of choice Fruit Trees, Forest, and Ornamental Trees, Shrubs, Plants &c., from the best nurseries in this country. They solicit orders from their friends and all in want of the above articles. Our central location and acquaintance with most of the nurserymen will enable us to meet the wants of all. When our arrangements are fully made, further and more particular notice will be given. In the mean time we shall be happy to receive orders from those in want of trees for setting out the ensuing autumn. Strawberry plants from one to four dollars per hundred.

E. COMSTOCK & Co.

Albany Ag. Warehouse, No. 10 Maiden Lane, and 23 Dean-st.  
Aug. 1, 1846.

## A FARM FOR SALE.

SITUATED in Florence, Erie Co O., containing 50 acres of good land, suitably proportioned in meadow, plow, pasture and woodland. On the premises is a good dwelling house and a small barn, a thrifty bearing apple orchard, with a variety of other fruit trees. Said farm is 3½ miles from Lake Erie, and is contiguous to good markets, churches, and schools. Any inquiry may be made by letter, post-paid, to H. DEAN, No. 135 Bridge-st., Brooklyn, N. Y., or of KNEELAND TODD, on the premises. Price, \$1,100.

August 1—2t\*

## MACHINE BELTING.

THE subscriber having completed arrangements, is now prepared to furnish the common Leather Banding. Also the superior patent Cemented and Riveted Banding, stretched and repaired by machinery of any required width, at the lowest rates. The banding is warranted to give satisfaction.

J. PLANT.

Aug. 1—1t.

5 Burling-Slip, N. Y.

## FARM MANAGER.

WANTED, a situation as manager or agent of a large farm or estate, by a farmer who has been educated on the border counties of England and Scotland, and upwards of three years in this country. Apply to

S. SANDS,

Aug. 1—1t \*

Office of the American Farmer.

## POTATOES.

TO those who desire choice varieties of potatoes for seed, a favorable opportunity is offered this fall, as we shall be prepared to furnish the following varieties during the season and until too cold for sending abroad, viz:

"Hall's Early June," decidedly the best early potato cultivated, being not only superior for the table, but good yielders and are fit for eating many days before any other kind. The "Carter Potato" for winter and spring, stands deservedly high, and produces better crops than the Pinkeye. The "Prolific Blue" is an abundant yielder, and where potatoes are grown for feeding stock are a valuable variety. All the above sorts will be carefully packed in barrels and shipped to order.

E. COMSTOCK & Co.

Aug. 1.

Albany Ag. Warehouse.

## GRANT'S FAN MILLS.

NO. 1, \$21; No. 2, \$23; No. 3, \$25; and No. 4, \$27; for sale at the Albany Agricultural Warehouse, 10 Maiden Lane, and 23 Dean-st.

E. COMSTOCK & Co.

Aug. 1, 1846.

## STRAWBERRY VINES.

HOVEY'S SEEDLING, Virginia Scarlet, Ross Phoenix, Black Hautbois, White Pine, and the Excelsior, the latter a new and superior variety, and an extraordinary bearer—for sale by the subscriber, at his nursery in Albany. Vines forwarded to any part of the country with promptness. Orders left with E. Comstock & Co., of the Agricultural Warehouse, in this city, will be received.

J. A. KANOUSE.

Albany, Aug. 1—1t.

## KENDALL'S CYLINDER CHURNS.

THE following in relation to the above churns, from a firm in Vermont, who purchase of us, will show in what estimation the cylinder churns are held.

"We wrote you a few days since, to forward three each of the two smallest size churns. Please send us immediately six each of three sizes. Churns are getting in good demand. Our people think there is quite a saving when they can fetch the butter in two minutes, instead of churning two hours with the old fashioned churn. The Kendall churn is getting to be all the go."

The above churns are always for sale at wholesale or retail, at the Albany Agricultural Warehouse, No. 10 Maiden Lane, and 23 Dean-st.

E. COMSTOCK & Co.

Aug. 1, 1846.

## KELSEY'S ALTERNATING BEE HIVE,

Patented May 9, 1846.

## ENTIRELY NEW PRINCIPLE IN THE MANAGEMENT OF BEES.

THESE hives, the only ones of real value and utility to farmers and others engaged in the culture of bees, now before the public, are constructed upon *natural principles*, and combine the following advantages: The bees are easily hived in them—it never becomes necessary to kill off the swarms; honey can at all times be taken away when it can be spared by the swarms, or more can be added for the sustenance of late ones; young swarms can be taken away at the proper periods, and put into other hives, where they go to work without the trouble of swarming or hiving, while the main swarms are never disturbed in their operations. The swarms are entirely protected from robbery by neighboring bees, and from mice and insects; they can be handled with perfect safety, and always living and breeding in new honey comb, are kept entirely healthy, and young swarms are always fully developed.

The eggs or embryo of the bee moth, or miller, cannot hatch or mature around these hives, and therefore the bees are *entirely protected* from the ravages of that destructive enemy, while the alternating principle is such that the bees are kept industrious the whole season through, by always having plenty of room to work in. Old honey comb cannot accumulate, nor will the bees "run out" or "die off" in these hives.

They have been fully tested by actual use, by over three hundred extensive bee culturists, under the direction of the inventor, and all the swarms are now and will remain as good as new and young swarms.

Ample directions accompany each hive, giving full instructions for the management of bees, which are so simple that any person with ordinary capacity and attention cannot fail to be successful in their management and culture.

They are sold very cheap, and all farmers or other persons who keep bees, or wish to enter into that profitable culture, will find these hives all that can be desired, and are invited to call at the American Institute, and S. Mitchell's, 34 Bank-st. N. Y. city; L. Freeman's, Bergen, N. J.; Bedell's Temperance House, Syracuse; A. Young, Geneva, N. Y.; W. Sago's, Watertown, N. Y., where they can be found and examined.

Applications for exclusive rights to make and use them in any part of the Union, must be directed to W. R. KELSEY, Starkey Yates Co., N. Y.

Single Hives, with individual rights, can be had by applying to the subscriber, or his agent, who will furnish each purchaser with a right signed by the patentee.

W. R. KELSEY, Patentee.

Aug. 1, 1846—4t.

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July, 1846—10 mos.

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July 1—3t.

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PURE Seed Wheat of the "Soules" variety, which yields from 40 to 50 bushels per acre, may be had at \$1 00 per bushel after the 1st of August. Orders may be addressed to

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No. 1 Arcade, Rochester, N. Y.

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E. COMSTOCK & Co.

July 1.

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### LINNÆAN BOTANIC GARDEN AND NURSERY, Late of William Prince, deceased, Flushing, L. I., near New-York.

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Aug. 1, 1846. 2t\*

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Aug. 1—1t.

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AND

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Subscriptions received by the publishers, as named above, and by the Agents for "THE CULTIVATOR," throughout the Union.

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